

**A QUASI EXPERIMENTAL STUDY TO EVALUATE THE
EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT
FOMENTATION ON KNEE JOINT PAIN AMONG POST
MENOPAUSAL WOMEN AT SELECTED COMMUNITY AREAS,
IN PUDUKKOTTAI.**



**A DISSERTATION SUBMITTED TO THE TAMIL NADU
DR. M.G.R MEDICAL UNIVERSITY, CHENNAI IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSING.**

OCTOBER 2018

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BY

C. CASSIA JEMI



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CERTIFICATE

Certified that this is the bonafide work of **Mrs. C. CASSIA JEMI**, Karpaga Vinayaga College of Nursing, Pudukkottai submitted in partial fulfillment of the requirement for the degree of Master of Science in Nursing under The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

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Date:

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TO WHOMEVER IT MAY CONCERN

This is to certify that the Ethical committee of Karpaga Vinayaga College of Nursing has discussed with its members regarding the topic **“A QUASI EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED COMMUNITY AREAS, IN PUDUKKOTTAI”**. During the year 2017-2018 adopted by **Mrs. C. CASSIA JEMI** and its implications on study subjects for her thesis for M.sc Nursing programme and the committee passed clearance for the same topic for her to pursue.

ETHICAL COMMITTEE

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**Every good and perfect gift is from above,
coming down from the Father of the heavenly lights,
who does not change like shifting shadows.**

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TABLE OF CONTENTS

CHAPTER NO	CONTENT	PAGE NO
	ABSTRACT	
I	INTRODUCTION	1-11
	Need for the study	
	Statement of the problem	
	Objectives of the study	
	Research Hypothesis	
	Operational definition	
	Assumption	
	Delimitations	
	Projected outcome	
II	REVIEW OF LITERATURE	12-25
	Literature related to	
	Post menopausal women	
	Knee joint pain among post menopausal women	
	Alternative therapies on knee joint pain among post menopausal women	
	Castor oil massage with hot fomentation on knee joint pain among post menopausal women	
	Conceptual framework	
III	RESEARCH METHODOLOGY	26-32
	Research approach	
	Research design	
	Variables	
	Study Population	
	Setting of the study	

	Sample	
	Sample size	
	Sampling technique	
	Criteria for sample selection	
	Research tool and technique	
	Scoring procedure	
	Validity and reliability	
	Pilot study	
	Data collection procedure	
	Plan for data analysis	
	Ethical consideration	
	Schematic representation of Research	
	Methodology	
IV	DATA ANALYSIS AND INTERPRETATION	33-51
V	DISCUSSION	52-55
VI	SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATION AND RECOMMENDATION	56-62
	Summary of the study	
	Conclusion	
	Implications of the study	
	Limitation	
	Recommendation	
	REFERENCES	63-67
	APPENDICES	

LIST OF TABLES

TABLE NO	TITLE	PAGE NO
1	Frequency and percentage distribution of demographic variables of post menopausal women with knee joint pain in experimental and control group.	35
2	Frequency and percentage distribution of pretest and post test level of knee joint pain among post menopausal women in the experimental group.	43
3	Frequency and Percentage distribution of pretest and posttest level of knee joint pain among post menopausal women in the control group.	44
4	Comparison of pre and post test level of knee joint pain among post menopausal women in experimental group.	46
5	Comparison of pre and post test level of knee joint pain among post menopausal women in control group.	47
6	Comparison of posttest level of knee joint pain among post menopausal women between the experimental and control group.	48
7	Association of posttest level of knee joint pain among post menopausal women with selected demographic variables in experimental group.	49

LIST OF FIGURES

Fig.NO	TITLE	PAGE NO
1	Conceptual framework – Wiedengach’s Helping Art of Clinical Nursing Theory	25
2	Schematic representation of research methodology.	32
3	Percentage distribution of occupation among post menopausal women in the experimental group.	39
4	Percentage distribution of occupation among post menopausal women in the control group.	39
5	Percentage distribution of age of attainment of menopause among post menopausal women in the experimental group.	40
6	Percentage distribution of age of attainment of menopausal among post menopausal women in the control group.	40
7	Percentage distribution of exercise among post menopausal women in the experimental group.	41
8	Percentage distribution of exercise among post menopausal women in the control group.	41
9	Percentage distribution of weight among post menopausal women in the experimental group.	42
10	Percentage distribution of weight among post menopausal women in the control group.	42
11	Percentage distribution of pretest and posttest level of knee joint pain among post menopausal women in experimental group	45
12	Percentage distribution of pretest and posttest level of knee joint pain among post menopausal women in control group	45

LIST OF APPENDICES

APPENDIX	TITLE
	Tools
A	a. Demographic variable (English) b. Demographic variable (Tamil) a. Oxford knee score(English) b. Oxford knee score(Tamil)
B	Training Certificate for Massage Therapy
C	Procedure of castor oil massage with hot fomentation
	Letters
D	a) Letter seeking permission to conduct the research study b) Letter granting permission to conduct the research study c) Requisition letter to Medical Guide d) Letter requesting for validation of the tool e) List of experts consulted for the content validity f) Certificate for editing(English, Tamil)

ABSTRACT

The health of Indian women is directly linked to their status in society. Every woman is unique, but there are few health problems more common among them especially after menopause. During the stage of post menopause most of the women complain about knee joint pain. Pain is a complex, multidimensional phenomenon. Everyone has experienced some types or degrees of pain. Pain prompts people to seek health care more often than any other problem. Pain is a leading cause of disability. Castor oil massage with hot fomentation has the ability to block pain impulses, improve lymphocyte count, increased blood flow, reduce muscle tension and neurological excitability, increased sense of wellbeing, and reduces the inflammation of the knee joint and increase sense of wellbeing among post menopausal women.

STATEMENT OF THE PROBLEM

“A QUASI EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED COMMUNITY AREAS, IN PUDUKKOTTAI DISTRICT”.

OBJECTIVES:

- To assess the pre test level of knee joint pain among post menopausal women in the experimental group and control group.
- To assess the post test level of knee joint pain among post menopausal women in the experimental group and control group.
- To evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women in the experimental group.
- To find out the association between the post test level of knee joint pain with the selected demographic variables in experimental group.

Conceptual framework : Modified Wiedenbach's helping art theory

Research design : Quasi Experimental, pre test post test control group design

E	O₁	X	O₂
C	O₁		O₂

Population : Post menopausal women with knee joint pain

Sample size : 60 post menopausal women with knee joint pain, 30 in experimental group and 30 in control group

Sampling : Non Probability – Purposive Sampling technique

Setting : Rural community areas, Pudukkottai

Tool : Demographic variables and Oxford knee score

Data collection : Quasi Experimental, pre test post test control group design was used. The duration of data collection was 6 weeks. Castor oil massage with hot fomentation was given to post menopausal women for 7 days. The level of knee joint pain was assessed with oxford knee score.

Data analysis : Descriptive Statistics (Frequency, Percentage, Mean, Standard Deviation), and Inferential statistics (paired' test, unpaired' test, chi – square) were used to test the research hypotheses.

MAJOR FINDINGS OF THE STUDY

1. Experimental group post menopausal women experienced mild level and no pain in the knee joint when compared with control group.
2. There was a significant difference in the level of knee joint pain between the control and experimental group. So that the application of castor oil massage with hot fomentation was found to reduce the level of knee joint pain among post menopausal women.
3. There was a significant association between the post test level of knee joint pain with the selected demographic variables in experimental group.

CONCLUSION

1. The castor oil massage with hot fomentation was simple and effective method to reduce the level of knee joint pain among post menopausal women.
2. The castor oil massage with hot fomentation was easy to practice and it is also easily available.

CHAPTER I

INTRODUCTION

BACKGROUND OF THE STUDY

‘Pain is such an uncomfortable feeling that even a tiny amount of it is enough to ruin every enjoyment’

- WILL ROGERS

Women's lives have changed over the centuries. Historically, life was particularly difficult for most women. Apart from the numerous dangers and diseases, women became wives and mothers often when they were just emerging from their own childhood. Many women had a large number of pregnancies which may or may not have been wanted. In the past, childbirth itself was risky and not infrequently, led to the death of the mother.

Most women in the past did not live long enough to be concerned about menopause or old age. Women and men share many similar health problems, but women also have their own health issues, which deserve special consideration. One of the women's health issues is menopause. It is one of the most important stages in a women's life.

The women life has three phases. The first stage is called virginity or maidenhood. The second stage is motherhood when consciousness turns outward, to the home and family. The final stage which begins at menopause is called the crone or wise women stage.

Hinkle & Cheever (2017) said that menopause is a Greek word typically means “meno” – month’ “pause”- stop; that means the cessation of menses. It is the permanent physiologic cessation of menses associated with declining ovarian

function. Most women stop menstruation between 48 and 55 years of age. When the menopause started there is a change in the menstruation. The monthly flow may increase or decrease, become irregular, and finally cease. Often, the interval between periods is longer; a lapse of several months between periods is uncommon. Changes signaling menopause begin to occur as early as the late 30s, when ovulation occurs less frequently, estrogen levels fluctuate, and follicle stimulating hormone levels increase in an attempt to stimulate estrogen production.

D.C.Dutta (2017) said that the term “post menopause” applies to the whole of a woman’s life after the menopause. It extending up to old age when the pathological changes due to loss of ovarian function is affected because of the changing levels of estrogen and progesterone hormones produced in the ovaries. It is the period beginning from about one year after cessation of menses.

Research on women status has found that the contribution of Indian women make towards family is overlooked, and instead they are viewed as economic burden. Every woman is unique, but there are few health problems more common among them. Most of the problems are usually arising after menopause. During this age group most of the women started to complain about joint pain especially knee joint pain.

Paice J.A (2017) stated that the pain is defined as an unpleasant sensation occurring in varying degrees of severity as a consequence of injury, disease, or emotional disorder. But the pain is more than unpleasant sensations. Pain is a major component part of your nervous system. Pain is ultimately a perception, and a bodily state. Despite its unpleasantness, pain is a critical component of the body's defense system. It is part of a rapid warning and defense relay instructing the motor neurons of the central nervous system to minimize detected physical harm.

Joint pain is one of the most common threats in post menopausal women. Aches, stiffness and swelling around the joint and sometimes heat are the typical alerts of menopausal joint pain. The hormone oestrogen has an important role in maintaining joint and bone health. During menopausal period levels of oestrogen in the body begin to drop. This gives rise to common menopause symptoms including hot flushes and night sweats, and may also result in swollen and painful joints.

A.O. Olajubu (2017) conducted a cross sectional study of influence of menopausal symptoms among 200 women aged 45 years and above in Ekiti state University, Nigeria. A semi structured questionnaire from the Greene Climacteric Scale was used to assess menopausal symptom respectively. The prevalence of menopausal symptoms was (96.7%). The commonest menopausal symptom experienced by the respondents were (81.5%) of musculoskeletal pain and (51.5%) were knee joint pain among them.

Nurse is an important member of the multidisciplinary pain management team. Nurses role in pain management includes pain assessment, administering therapies, monitoring for side effects and teaching patients and valuating feedback.

NEED FOR THE STUDY

Musculoskeletal disorders are the most frequent cause of disability in the modern world, and the prevalence of these diseases is rising at an alarming rate. The most prominent reason for loss of joint mobility and function is chronic or episodic pain, which leads to psychological distress and impaired quality of life.

Arthritis research UK (2017) estimated globally that the prevalence of knee joint pain is 8.75 million in the age group of 45 years-50 years. In that 60% was female. Women accounted for around 60% of knee replacement operations the majority of which are due to osteoarthritis.

Chandra Shekhar Azad (2017) estimated that India has higher proliferative rate of osteoarthritis among world and expected to be at top second rank in chronic diseases. In Indian, nearly 80% of population shows osteoarthritis. In that 60% of women had osteoarthritis in between the age group of 60 years to 65 years, out of which approximately 45% reported incapability in daily activities. The study reveals that “India is predicted as chronic disease capital of osteoarthritis by 2025 and has 60 million people with arthritis in India.

WHO in March (2016) – estimated that the arthritis is one of the ten most disability disease in developed countries. Worldwide estimates are 18.0% of women aged over 60 years have arthritis.

Dr. Abhinav Kotak (2016) was conducted a cross-sectional study about Prevalence of Knee pain among menopausal women at the department of orthopedics, Gujarat Adani institute of medical science, Gujarat. A total of 150 women, age of the population was 45 to 65years with knee joint pain and clinically diagnosed by orthopaedic doctor and confirmed as Knee joint pain. The investigator administered a questionnaire to estimate the prevalence and associated risk factors of Knee joint pain, and related complications among menopausal women. The knee joint pain was assessed by WOMAC score. The result showed that about 46% of the women were having knee joint pain, 54% of women have related problem such as depression, instability, weakness, morning stiffness, etc.

S.Srinivasan, et al., (2015) conducted a community based cross sectional survey in primary health centre of Bhwanagir, Cuddalore health unit district, to find out the prevalence of menopausal complication among elderly population in rural area with selected socio-demographic variables. Totally 400 women were participated in the study. The researcher used ACR (American College of Rheumatology) clinical criteria to diagnose the menopausal problem

complication. The result shows that 40% found to be independent risk factors for knee joint pain. The finding suggests that as the population of India is increasing; the number of elderly is going to increase resulting in higher magnitude of burden of knee joint problem due to menopause.

John Kamala Russel (2015) estimated that the prevalence of knee joint pain among rural people with the age group of 40 years to 55 years in Tamil Nadu. The knee joint has the highest incidence (40%) of developing osteoarthritis compared to the other joints. The primary signs and symptoms associated with knee osteoarthritis include pain, stiffness and swelling. As knee osteoarthritis progresses, symptoms generally become more severe and pain may become continuous rather than only during weight-bearing activities. In that 19.7% of women and 15% of men were affected with knee joint pain.

William Morrison (2015) stated that complications of untreated arthritis in post menopausal include joint destruction, joint misalignments, altered gait, shortening of affected legs from the loss of joint space, disfigurement of joints with or without functional impairment, flexion deformities, contractures affecting daily tasks, systemic manifestations, and a vascular necrosis in addition to irreversible damage to joints, bones, organs and skin.

The ability to block pain impulses is the reason by which a person is more prone to immediately grab and massage. The touch blocks the transmission and duration of pain impulses. This has its implication in use of touch and massage for pain relief.

Caffarelli and Flint (2015) stated that the massage has been defined as “mechanical manipulation of body tissues with rhythmical pressure and stroking for the purpose of promoting health and wellbeing”. Effleurage slow rhythmic

stroking hand movements, molded to the shape of the skin, frequently begin and end a treatment session .The strokes pass from distal to proximal and parallel to the long axis of the tissue. Gradual compression reduces muscle tone and induces a general state of relaxation that relieves muscle spasm and prepares the patient for more vigorous treatment. Firm pressure accelerates blood and lymph flow, improves tissue drainage and thus reduces recent swelling. Skin rolling treats muscle tension, scarring and provides a relaxation effect. Pounding is a percussion movement that is used to produce stimulation. . Skin rolling is performed by picking up the skin and connective tissue between the fingers and thumbs and rolling the tissue over the thumbs rage techniques to stimulate the parasympathetic nervous system and the relaxation response.

Adam .et. al., (2012) stated that massage can provide several benefits to the body such as increased blood flow, reduced muscle tension and neurological excitability, and an increased sense of wellbeing. Massage is beneficial on cellular (increasing the number of mitochondrias, inducing cell signaling and transduction), physiological (blood flow and blood-borne substance), neurological (investigated by H-reflex).

Chris Illiades (2012) stated that massage therapy is most commonly used type of complementary and alternative medicine. The massage relive pain, reduce stress and enhance relaxation and increase general well being, touch and manipulation with the hands been used in a practice of medicine since its inception of alleviating motor problems, reducing pain, and enhancing immune function.

There are a number of non – pharmacological interventions that might lessen pain and that can be used in combination with pharmacological measures. The examples include Relaxation and Guided imagery, Biofeedback, Cutaneous

stimulation, distraction etc. Use of herbal products in management of pain or other ailments comes under complementary and alternative system of medicine in the collaborative care of arthritis. Rubbing in any form is a kind of cutaneous stimulation.

George Krucik, (2012) stated that cutaneous stimulation is referred to as a peripheral technique, describe any form of stimulation of the skin with the goal of pain relief. There are many different methods of cutaneous nerve stimulation. These methods are superficial forms of treatment that the nurse in practice is qualified to use. Cutaneous stimulation is suggested to cause the release of endorphins, thus blocking the transmission of painful stimuli.

Jon Yaneff (2012) stated that Castor oil is a common vegetable oil obtained from the castor seed, *Ricinus communis*. It is native to India but has been used throughout the centuries for medicinal purpose. Castor oil has long been used as a top treatment for arthritic diseases and joint problems. Castor oil is also known for its antifungal, antibacterial, and antiviral properties. One of the more compelling health benefits is castor oil's support to immune system. And this healing property does not require us to ingest the oil, but only to apply it externally. Toxin is stored mainly in the lymphatic tissue (thymus gland, spleen, and lymph nodes).

When lymphatic system is not working properly, waste and toxins can build up and make sick. Lymphatic congestion is a major factor leading to inflammation and disease. This is where castor oil comes in. When castor oil is absorbed through skin the lymphocyte count increases. Increased lymphocytes speed up the removal of toxins from your tissues, which promote healing. Castor lymphocytes speed up the removal of toxins from our tissues which promote healing. Castor has been shown to offer relief from arthritis, back pain and

neuralgia. The way that castor works is that when it is applied into the skin it stimulates the nerves, this minimizes the pain message sent to the brain.

Phillp Princetta (2012) stated that castor oil has been used topically for various therapeutic purposes for thousands of years, and it is an anti-toxin and having the impact on the lymphatic system enhancing immunologic function.

Sr. Nancy (2008) stated that hot application is the application of a hot agent, warmer than skin either in a moist or dry form on the surface of the body to relive pain and congestion, to provide warmth, to promote suppuration muscle tone and to soften the exudates.

Stanton. DE, et al., (2008) reviewed the effectiveness of hot baths on rheumatoid arthritis at department of occupational therapy, Samuel Merritt college, California. The hot bath application increases the blood flow, intramuscular temperature, and reduces the inflammation.

Effective pain management not only reduces physical discomfort but also improves quality of life and promotes earlier mobilization. The researcher have an idea to carry out one of the complimentary therapy castor oil massage with hot fomentation as an intervention for reducing the knee joint pain for post menopausal women which will be safe and natural remedies. Hence the study was undertaken to evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women.

STATEMENT OF THE PROBLEM

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OBJECTIVES:

- To assess the pre test level of knee joint pain among post menopausal women in the experimental group and control group.
- To assess the post test level of knee joint pain among post menopausal women in the experimental group and control group.
- To evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women in the experimental group.
- To find out the association between the post test level of knee joint pain with the selected demographic variables in experimental group.

HYPOTHESES:

H1: There will be a significant difference between the pre and post test level of knee joint pain among post menopausal women in experimental group.

H2: There will be a significant difference in pre test and post test level of knee joint pain among post menopausal between the experimental group and control group.

H3: There will be a significant difference in the level of knee joint pain among post menopausal women after application of castor oil massage with hot fomentation in experimental group.

H4: There will be a significant association between the post test level of knee joint pain among post menopausal women with the selected demographic variables.

OPERATIONAL DEFINITION:**EVALUATE:**

In this study evaluate refers to the process of checking the level of knee joint pain among post menopausal women before and after the application of castor oil massage.

EFFECTIVENESS:

In this study effectiveness refers to the extent to which the castor oil massage with hot fomentation cause a reduction in knee joint pain among post menopausal women.

CASTOR OIL MASSAGE WITH HOT FOMENTATION:

In this study castor oil massage with hot fomentation refers to the readily available castor oil is applied over the knee joint followed by the massage includes stroking, skin rolling, hacking, pounding, and picking up with hand for 20 minutes and hot fomentation [125°F (51.7°C)] is given for 5 minutes. The castor oil massage with hot fomentation is given for 2 times per day for 7 days.

KNEE JOINT PAIN:

In this study knee joint pain refers to the mild, moderate, severe pain felt on one or both knee joints which is assessed by using oxford knee score.

POST MENOPAUSAL WOMEN:

In this study post menopausal women refers to the period presently in which the women's menstrual process gets stopped and who are between the age of 45 to 60 years.

ASSUMPTION:

- Post menopausal women may experience knee joint pain
- Alternative therapy will play an important role in reducing knee joint pain among post menopausal women.
- Application of Castor oil massage with hot fomentation will reduce the knee joint pain among post menopausal women.
- Castor oil massage with hot fomentation will not produce any side effects.

DELIMITATIONS:

- The study was limited to 60 sample
- Sample size is limited to post menopausal women in Pudukkottai.
- Period of study is limited to 6 weeks
- The study is limited to rural area.

PROJECTED OUTCOME:

- The study will enable to identify the level of knee joint pain among post menopausal women.
- The castor oil massage with hot fomentation will help the post menopausal women to get relief of their knee joint pain.
- The finding of the study will help the researcher to motivate the post menopausal with knee joint pain to apply the castor oil massage with hot fomentation women for prolonged relief.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is an important step in the development of the research project and in broadening the understanding and developing an insight into the problem area .It further helps in development of the broad conceptual context in which the methodology , construction of tools and development of instructional module and analysis of data are presented

-Polit and Beck

Review of literature is an essential component of the research process. It is a critical examination of publication related to the topic of interest and review should be comprehensive. It helps to plan and conduct study in a systematic and scientific manner.

For the present study, the related literature was review and organized under the following headings.

- Literature review related to post menopausal women
- Literature review related to knee joint pain among post menopausal women
- Literature review related to alternative therapies on knee joint pain among post menopausal women.
- Literature review related to castor oil massage with hot fomentation on knee joint pain among post menopausal women.

Literature review related to post menopausal women

Nabarun Karmakar (2017) conducted a community-based study about the Quality of life among menopausal women in a rural area of West Bengal. The study was carried out among 100 pre and post menopausal women aged between (40–60 years) in Dearah village of West Bengal which is the rural field practice area of All India Institute of Hygiene and Public Health. The questionnaire used as study tool had two parts - Part 1 is Socio demographic characteristics. Part 2 is about quality of life and used the 29-item Menopause-Specific Quality of Life Questionnaire. Results were occurrence of physical symptoms was 60% in that knee joint pain was 40% and 40% have psychological symptoms. The study concluded that menopause causes both physical and psychiatric problems. Education, creating awareness and providing suitable intervention to improve their quality of life are important which should be imparted to menopausal women at both individual and community level.

Nilanjana Das (2015) conducted a cross- sectional study among postmenopausal women at Gauhati Medical College & Hospital, Guwahati, Assam, to evaluate the age at menopause and prevalence of menopausal symptoms, also to determine the awareness and attitude towards menopause. 200 Post menopausal women were interviewed using a pretested, self-designed oral, interview based questionnaire. In the present study the mean age at menopause was 46 years. About 80.5% of the women had one or more menopausal symptoms. The common symptoms of menopause seen in this study were muscle and joint pain (63%), arthritis 24.5%. Majority of the women 63.5% were unaware about menopause. Only 30.5% took treatment for menopausal symptoms. Education, occupation, lifestyle and income had statistically significant association with menopausal symptoms. The high prevalence of menopausal symptoms observed in this study proves that menopausal symptoms are common but due to lack of awareness, they do not seek medical advice.

Hence priority lies on generating awareness among women about menopause and menopausal symptoms and establishment of dedicated menopause clinic to help these women live a healthy and comfortable life.

P.P. Venugopalan (2013) conducted a community based cross-sectional study to find the prevalence of menopausal symptoms and perceptions regarding menopause among menopausal women in Kannur Medical College, Anjarakandy. The study was conducted among 106 postmenopausal women.. Random sampling of houses was done. Data was coded, entered, and analyzed using SPSS 15. Chi-square test, proportions, and percentages were used. The mean age of attaining menopause was 48 years. Prevalence of symptoms among post menopausal women was musculoskeletal problems (joint pain, muscle pain) 53.3% and 90% of emotional problem. The study concluded that the post menopausal women were suffering from one or more number of menopausal symptoms.

Priya Kapur et al., (2009) conducted a study to evaluate the age at onset of natural menopause and the prevalence of symptoms and identify any socio demographic, physical, or other factors that may influence the onset of menopause among women in the Haridwar district of Uttarakhand. Women in the age group of 30 to 65 years were interviewed using a questionnaire that has a four-point scale. Participants (N = 129) were divided into three categories: pre menopause, early post menopause (1-5 years after last menstrual cycle), and late post menopause (>5 years after last menstrual cycle). The Greene Climacteric Scale was used to assess the frequency and severity of the climacteric symptoms. The mean SD age at menopause was observed. The most prevalent symptom was muscle and joint pains (55.81%). The study concluded that the mean SD age at menopause was 45.02 +/- 4.35 years in the increase in the percentage of occurrence and severity of symptoms with transition to menopause was observed.

Literature review related to knee joint pain among post menopausal women

Salini Lisa Cyriac (2016) conducted a descriptive study about menopausal problems among postmenopausal women in Ahmedabad. The study was carried out among 108 post menopausal women. The mean age of menopause was 49 years. And 46.2% had attained menopause between 45 and 50 years of age. Among the 108 participants, all of them had muscle and joint pain (92.7%), headache (88%), loss of interest in most things (87.9%), feeling dizzy or faint (86.1%), and loss of interest in sex (84.3%) respectively. The study concluded that as all the menopausal women experience menopausal problems, there is a need to address the menopausal problems and measures for its prevention of complication and management.

Sarkar amritar (2014) was conducted a cross- sectional study on health profile of post menopausal women Jamnagar Gujarat. The study carried out with 300 women of 40-65 years of age group.. The most common symptoms associated with menopause were joint pain (64%), backache (58%). The study concluded that the life expectancy and population of post-menopausal women increases, efforts are needed to educate them and make them aware about various menopausal symptoms. This will enable them to recognize these symptoms early, to seek timely medical treatment for the same and improve quality of life.

Akanksh Singh et al., (2014) conducted cross-sectional study related to menopausal symptoms of postmenopausal women in a rural community area in Delhi. The sample was 252 menopausal women with the age group of 45 to 55 years. The pretested, self-designed, semi structured, interview based, oral questionnaire was used to assess the menopausal symptoms. The result was mean age at attaining menopause was 46.24 (Standard Deviation = 3.38) years. Only 4 (1.6%) postmenopausal women had premature menopause. A total of 225 (89.3%) postmenopausal women experienced at least one or more menopausal

symptom(s). The most common complaints of postmenopausal women were sleep disturbances (62.7%), muscle or joint pain (59.1%).

Poomalar G.K (2013) carried out a cross- sectional study was done at Sri Manakula Vinayagar Medical College and Hospital, Puducherry with Five hundred women who were in the age group of 40-65 years, who came from rural areas to the hospital, The women who were included in the study were divided into three groups as the menopause transition, early postmenopausal and the late postmenopausal groups. The p-value of less than 0.05 was considered to be statistically significant. Mean menopausal age in the study group was 45 years. The most common symptom within study subjects were low back ache (79%) and knee-joint pain (77.2%). The least frequent symptoms were increase in facial hair (15%) and feeling of dryness during intimacy (10.8%). Scores of physical domain were significantly more in late postmenopausal group. The study was concluded that menopause related symptoms had a negative effect on the quality of life of the premenopausal and the postmenopausal women.

Literature review related alternative therapy on knee joint pain among post menopausal women

Chandrakanth K. K. et.al., (2018) conducted a study to evaluate the effectiveness of a hydrotherapy based alternate compress on osteoarthritis of the knee joint .The sample size was 60 with the age between 45-60 years. Randomized controlled trial was used to select the sample. And the sample was selected by using a lottery method. . Pain was assessed with Numerical Rating Scale (NRS) and Knee injury and Osteoarthritis Outcome Score (KOOS). The result was there is a significant reduction in pain in experimental group compared to control group p value (< 0.05). And the study concluded that an alternate hydrate compress was effective in the management of pain in knee osteoarthritis.

Archanah.T (2018) conducted a comparative study to assess the effect of conventional physiotherapy and additional yoga among 56 patients undergoing total knee arthroplasty due to osteoarthritis. After six weeks of intervention, perception of pain, stiffness and function was measured with WOMAC pain score. The results suggest that there was a significant change ($P<0.05$) for all the groups for pain, stiffness and function subscales of WOMAC scale. The pain and stiffness was found to be less in experimental group receiving additional yoga therapy than in conventional group on 3rd post operative day, 6 weeks and 3 months after the surgery. And the study concluded that combination of physiotherapy and yoga asana protocol works better than physiotherapy protocol.

Ruth Benita. F (2016) conducted a study to assess the effectiveness of Hot water compress with Epsom salt on joint pain among old age patients with Rheumatoid admitted at ortho ward in Spine Arthroscopic and Joint Replacement Centre, Coimbatore. The research design adopted was a quasi experimental pretest and post test control group design. The conceptual framework of his research has based on Modified Imogene king's Goal attainment theory model. The study has adopted simple random sampling technique and the estimated sample size was 60 Patients. The numerical pain score was used to assess the joint pain. Epsom salt compress was prepared by adding 30 grams of Epsom salts to one liter of boiling water creating a hot compress by dipping a clean wash cloth in the boiling water, wringing it out, and applying for 20 minutes over the joint in which pain was 26 present, twice a day for 10 days will often relieve the joint pain, leg pain and other joint muscle alignments. The result of the study was a there is a significant difference between pre and post test level of arthritis pain score among old age patients in experimental group. (t value = 10.95, $p = 0.001$ at $p<0.05$). The study concluded that hot water application with Epsom salt was effective in reducing Rheumatoid Arthritis joint pain among Old age patients.

Sajitha et.al., (2014) conducted a comparative study to compare the effectiveness of hot versus cold application for assessing the mobility status of 60 patients with rheumatoid arthritis at Rajiv Gandhi Government General Hospital, Chennai. Randomly 30 were allocated to each group. Hot application was given for one group and cold application to another group for 4 days. Their mobility status was assessed using modified Western Ontario and McMaster Universities arthritis index before and after the treatment. The post test mean level of mobility status, in hot application group was 47.53 with a standard deviation of 11.21 and in cold application group it was 56.17 with a standard deviation of 13.21 ($t = 2.27$, $p = .01$). This shows that hot application is more effective than cold application in improving the mobility of patients with rheumatoid arthritis.

Shunsuke Ochiai (2014) conducted a cross sectional study to evaluate the effects of local heat treatment and exercise therapy for knee Osteo arthritis among 200 post menopausal women aged between 48-55 years with 12 weeks of intervention. The sample was assessed with JKOM score. The study concluded that after local heat treatment using heat- and steam moisture-generating sheets for 12 weeks, improves walking abilities and had positive effects on cartilage metabolism among post menopausal women.

S.Dhivya (2012) conducted an Experimental Study to assess the effectiveness of mustard plaster application upon knee joint pain among elderly clients in selected Community, Chennai. The sample size was 60. Simple random sampling technique with lottery method was used to assign the subjects into control and experimental group. The investigator used numerical pain rating scale, observational check list for signs and symptoms, rating scale to assess the level of satisfaction to collect data from the elderly clients Mustard plaster (Paste made from 20 gms of mustard powder and 40 gms of wheat flour mixed with needed water, evenly spread in-between cloth) was applied to both the knees follow by hot water bag application given for 15 minutes daily for a period of

seven days to all the elderly clients with knee joint pain in the experimental group. In contrast in the experimental group the knee joint pain level ($M=4.17$; $SD=1.37$) & level of signs and symptoms ($M=2.27$; $SD=1.27$) after the therapy was low, compared to those before the therapy ($M=6.37$; $SD=1.13$) & ($M=5.23$; $SD=2.09$) respectively. The difference was found to be statistically significant. Hence mustard plaster application was more effective and it reduces the knee joint pain among elderly clients.

Gilcy George (2011) conducted an experimental study to evaluate the effectiveness of camphor oil in the reduction of joint pain among arthritic patients in Kerala. This study was done on 60 samples (30 – experimental and 30– control groups). The experimental group received camphor oil rubs for 1- 2 minutes with an assessment period of 15 – 20 minutes for 15 days. Post assessment was carried out for the experimental group and control group by means of numerical pain scale after the observation period. The pre test mean 6.16 and standard deviation 1.3153 of the experimental group very high statistical significance at $P < 0.001$ level. The mean 3.5 and SD 1.36 of the experimental group when compared against the mean 4.7 and SD 1.47 of the control group reveals the t value of 3.29 which is highly significant at $P < 0.01$ level. The results showed that the camphor oil can reduce arthritic pain perception among arthritic patient and minimizes the use of narcotic analgesics.

Yildirim. et al., (2010) conducted an experimental study to evaluate the effect of heat application on pain, stiffness, physical function, in Midwifery department, Cumhuriyet University, Turkey. 80 clients between the age group of 50-60 years were selected randomly and the intervention group received 20 minute heat application every day for four weeks in addition to routine medication and the control group not received therapy. It was found that heat application decreased pain and disability of the patients in experimental group.

Heat application was found to improve the sub dimensions of quality of life scores of physical function, pain and general health perception of patients.

Literature review related to castor oil massage with hot fomentation on knee joint pain among post menopausal women.

Nikita H Chauhan (2017) conducted a study related effectiveness of the hot application and castor oil. Application of hot application and castor oil the Clients with joint Pain will reduce the level of knee joint pain. The researcher goes through various literature reviews, and that studies suggested that the hot application and castor oil application is helpful for reducing joint pain. Hence researcher recommended the hot application and castor oil application to reduce joint pain.

S. Sylvia Deva Roopa (2015) conducted a study to evaluate the effectiveness of castor oil massage with hot application on knee joint pain among women. One group pretest post-test design was used in this study. Totally 50 women, in the age of 30 to 60 years were selected by random sampling method. In the pre test, 28% of the women had severe knee joint pain and 72% of the women had moderate knee joint pain and in the post test after 2 weeks of intervention of castor oil massage with hot water application 24% of the women had moderate knee joint pain and 76% of the women had mild knee joint pain. The study concluded that the castor oil with hot application is the effective method to reduce knee joint pain and improve the quality of life among post menopausal women.

Medhi B1, Kishore K et al., 2009 was conducted randomized, double-blind, comparative clinical study was to compare the safety and efficacy of castor oil with diclofenac sodium in patients with knee osteoarthritis. Subjects with symptoms of knee osteoarthritis were given a castor oil capsule 0.9 mL (n= 50)

thrice daily for 4 weeks or a capsule of diclofenac sodium (n = 50), 50 mg thrice daily for 4 weeks. The subjects completed an overall evaluation of symptom relief at 2 weeks and 4 weeks of completed treatment. The subjects were evaluated by clinical, routine laboratory and radiographic investigations for improvement of disease conditions and also for adverse drug reaction. On completion of 4 weeks treatment it was observed that both drugs were significantly effective in the treatment knee osteoarthritis ($p < 0.001$) and adverse drug reactions were high with diclofenac sodium, whereas with castor oil there were no adverse effects reported. The study indicates that castor oil capsule can be used as an effective therapy in primary knee osteoarthritis.

CONCLUSION:

The above review of literature shows that the castor oil massage is very effective to reduce the knee joint pain among post menopausal women.

CONCEPTUAL FRAME WORK

The conceptual frame work for research study presents the measure on which the purpose of study is based. The frame work provides the perspective from which the investigator views the problems.

The study is based on the concept that the effectiveness of castor oil massage will reduce the level of knee joint pain enhancing individual well being. The investigator adopted the modified Ernesting Wiedenbach's helping art of clinical nursing theory as a base for developing the conceptual frame work.

Ernestine Wiedenbach's proposes helping art of clinical nursing theory in 1964 for nursing, which describes a desired situation and a way to attain it. It directs action towards the explicit goal. This therapy has 3 factors.

Central purpose

Prescription

Realities

Central Purpose

It refers to what the nurse is to accomplish. It is the overall goal towards which a nurse strives; it transcends the immediate indent of the assignment or task by specifically directing activities towards the client good. In this study the central purpose is to reduce knee joint pain among post menopausal women.

Prescription

It refers to the physical, physiological, emotional and spiritual factors that come into play in situation involving nursing action. The five realities identified are agent, recipient, goal, mean activities and frame work.

The agent is the practicing nurse or a designee who has personal attributes, capacities, capabilities, commitment and competence to provide nursing care. In this study the researcher is the agent.

The recipient is the post menopausal women who have personal attributes, problems, capabilities, aspirations and abilities to cope. The recipient is one who receives nurses actions. In this study post menopausal women with knee joint pain were the recipients.

The goal is the nurse's desired outcome. It directs actions and suggests the reasons for taking those actions. In the study goal is reduction in the level of knee joint pain.

The means are the activities and devices used by the nurse to achieve the goal. In this study castor oil massage in the knee joints with hot fomentation for the purpose to reduce the knee joint pain is the mean.

The framework refers to the facilities in which nursing is practiced. In this study frame work refers to selected community area.

The conceptualization of nursing according to this theory consists of 3 steps as follows.

Step 1: Identifying the need for help.

Step 2: Ministering the need for help.

Step 3: Validating that the need for help was met.

Step 1: Identifying the need for help:

This step determines a postmenopausal women's need for help based on the existence of a need, whether the post menopausal realizes the need, what

prevents the post menopausal women from meeting the need and whether the client cannot meet the need alone. In this study post menopausal women who are suffering from pain in one or the other joints and those who have physical limitation as a result of pain in their activities of daily are not possible to get adequate pain relief and comfort in their living. Post menopausal women are identified based on the inclusive criteria and exclusive criteria. General information of post menopausal women was collected and assessment of the level of Knee joint pain was assessed with oxford knee score.

Step 2: Ministering the need for help

This refers to provision of need help. In this study after the pre assessment of the level of pain castor oil massage with hot fomentation were given to the knee joints for 30 post menopausal women in the experimental group.

Step 3: Validating that the need for help was met

This refers to a collection of evidence that shows a post menopausal women's needs have met and that his functional ability has been restored as a direct result of the nurse's actions. This is accomplished in this study by means of post assessment of the level of knee joint pain after castor oil massage with hot fomentation.

Central Purpose Effective Management
of knee Joint Pain

Identifying the need for help

Demographic variables

Age, education, Religion,
occupation, type of family,
Income, no of children,
personal habits, age of
attained menopause,
exercise.

&
Assessment of pre test level
of pain perception with the
help of Oxford Knee Score

Experimental group

Control group

Ministering the need for help

Agent	Recipient	Goal	Means	Frame work
The Investigator	Post menopausal women with Knee Joint Pain	Reduction of knee Joint Pain	Application of Castor Oil Massage with Hot Fomentation	Community area

MEANS

Application of Castor oil
massage with hot fomentation

No intervention

Validating that the need
for help was met

Assess the
level of
knee joint
pain with
Oxford
kneeKnee

Severe

Moderate

Mild

Normal

Re assessment

Conceptual framework Based on Modified Wiedenbach's helping Art of Clinical Nursing Theory-1956

CHAPTER-III

METHODOLOGY

Methodology of research refers to their investigator of the ways obtaining organizing and analyzing methodological data. Studies address the development validation and evaluation of research tools and methods.

- **Ranjan Das**

This chapter consists of research approach, research design, variables, settings, population, sampling technique, sample size, criteria for sample selection, development of the tool, pilot study, and a detail of variables.

REASEARCH APPROACH:

Quantitative approach was used to evaluate the effectiveness of castor oil massage with hot fomentation.

RESEARCH DESIGN:

Quasi experimental, pre-test post-test control group design was used for this study.

SCHEMATIC REPRESENTATION

E	O₁	X	O₂
C	O₁		O₂

The symbol used,

E – Experimental group

C- Control group

O1 –Assessment of the pre test level of knee joint pain among post menopausal women in experimental group and control group

X – Application of castor oil massage with hot fomentation for post menopausal women with knee joint pain.

O2 – Assessment of the Post test level of knee joint pain among post menopausal women in the experimental group and control group.

VARIABLES

INDEPENDENT VARIABLE

- Castor oil massage with hot fomentation

DEPENDENT VARIABLES

- Knee joint pain among post menopausal women.

SETTING

This study was conducted in Nachandupatti and Arimalam, in Pudukkottai District. The distance between college and Nachandupatti was 10 Km and the distance between college and Arimalam was 18 Km. The reason for selecting this rural community areas were the availability and accessibility of samples and expectation of cooperation from the community people for collection of data.

POPULATION

The population for this study was post menopausal women.

SAMPLE

The sample for this study was post menopausal women with knee joint pain who were residing at Nachandupatti and Arimalam areas in Pudukkottai.

SAMPLE SIZE

- The sample for this study consists of 60 post menopausal women with knee joint pain. In that 30 samples were in experimental group and 30 samples were in control group.

SAMPLING TECHNIQUE

Non probability purposive sampling technique was adopted in this study.

CRITERIA

INCLUSION CRITERIA

Post menopausal women who were

- having mild, moderate to severe knee joint pain as measured by Oxford knee score.
- available during the time of data collection
- can understand Tamil

EXCLUSION CRITERIA

Post menopausal women who were,

- on regular medication for pain.
- underwent knee surgery.
- allergic to castor oil
- not willing to participate in this study

DESCRIPTION OF THE TOOL

The instrument was developed by the investigator with the guidance of experts. The tool consists of two parts.

SECTION A: DEMOGRAPHIC VARIABLES

It consists of selected demographic variable of age, education, religion, occupation, type of family, family monthly income, no of children, history of personal habit, age of attaining menopause, history of regular exercise, and weight.

SECTION B: ASSESSMENT OF THE LEVEL OF KNEE JOINT PAIN

The tool to assess the knee joint pain among post menopausal was with standardized oxford knee score. (12 items of self-reported questionnaire regarding the post menopausal women's knee joint pain and level of function. The scoring system ranges from 0-4 on each question with 4 representing maximum function and 0 representing poorest function. Using this scale the lowest worst score is 0 and the highest best score is 48).

SCORING PROCEDURE

Score	Category of pain
0 – 19	Severe
20 – 29	Moderate
30 – 39	Mild
40 – 48	Normal

VALIDITY AND RELABILITY OF THE TOOL:

VALIDITY

The validity of the tool was established by consultation with guide and two experts in the field of medical surgical nursing, one expert in the field of orthopedics and one expert in the field of physiotherapy, and one expert in the field of statistics. The tool was modified according to the suggestions and recommendations given by the experts.

RELIABILITY:

Reliability of an instrument is the degree of consistency measures that attribute it is supposed to be measured. Reliability of the tool was estimated in the study of subjects by using test retest method. The scores obtained were correlated. Reliability was found to be $r = 0.9$, which was positively correlated. Hence the tool was found to be reliable.

PILOT STUDY

Pilot study was conducted at rural area, Maravapatti and Sivapuram in Pudukkottai for a period of one week. A total of 6 samples of post menopausal women with knee joint pain were selected 3 in experimental group and 3 in control group. The samples were selected by non probability purposive sampling technique.

Verbal consent was obtained. Demographic data were collected from the post menopausal women with knee joint pain. The level of knee joint pain was assessed with oxford knee score. Then the castor oil massage with hot fomentation was applied for about 7 days and the post test level of knee joint pain was assessed using the oxford knee score.

The data collection found to be amenable to statistical analysis and thus the tool was found to be feasible and practicable for conducting the main study.

METHODS OF DATA COLLECTION

ETHICAL CONSIDERATION:

The dissertation committee prior to the pilot study approved the study. Permission was obtained. The verbal consent was obtained from each participant of study before starting data collection. The post menopausal women with knee joint pain were informed that confidentiality will be maintained throughout the study.

PROCEDURE FOR DATA COLLECTION

A total sample of 60 post menopausal women with knee joint pain who met the inclusion criteria were selected by using Non probability purposive sampling technique. Among them 30 were in experimental group and 30 were in control group in selected areas respectively. The period of data collection was about 6 weeks. The data was collected on all seven days of the week. On selection of the study subject, self introduction was given. Verbal Consent was obtained. Pre test level of knee joint pain was assessed with oxford knee score among post menopausal women in experimental and control group. After the pre test castor oil massage with hot fomentation was applied for 7 days to the experimental group. Post test level of knee joint pain was assessed by using oxford knee score and categorized as per the scoring procedure among post menopausal women.

PLAN FOR DATA ANALYSIS:

- The collected data was arranged and tabulated to represent the findings of the study.
- Frequency, percentage distribution was used to analyze demographic variables.
- Mean and standard deviation was used to analyze the level of knee joint pain.
- Paired “t” test and unpaired “t” test was used to find out the difference between pre test and post test of the experimental and control group.
- Chi square test was used to find out the association between post test level of knee joint pain and the selected demographic variables in the experimental group.

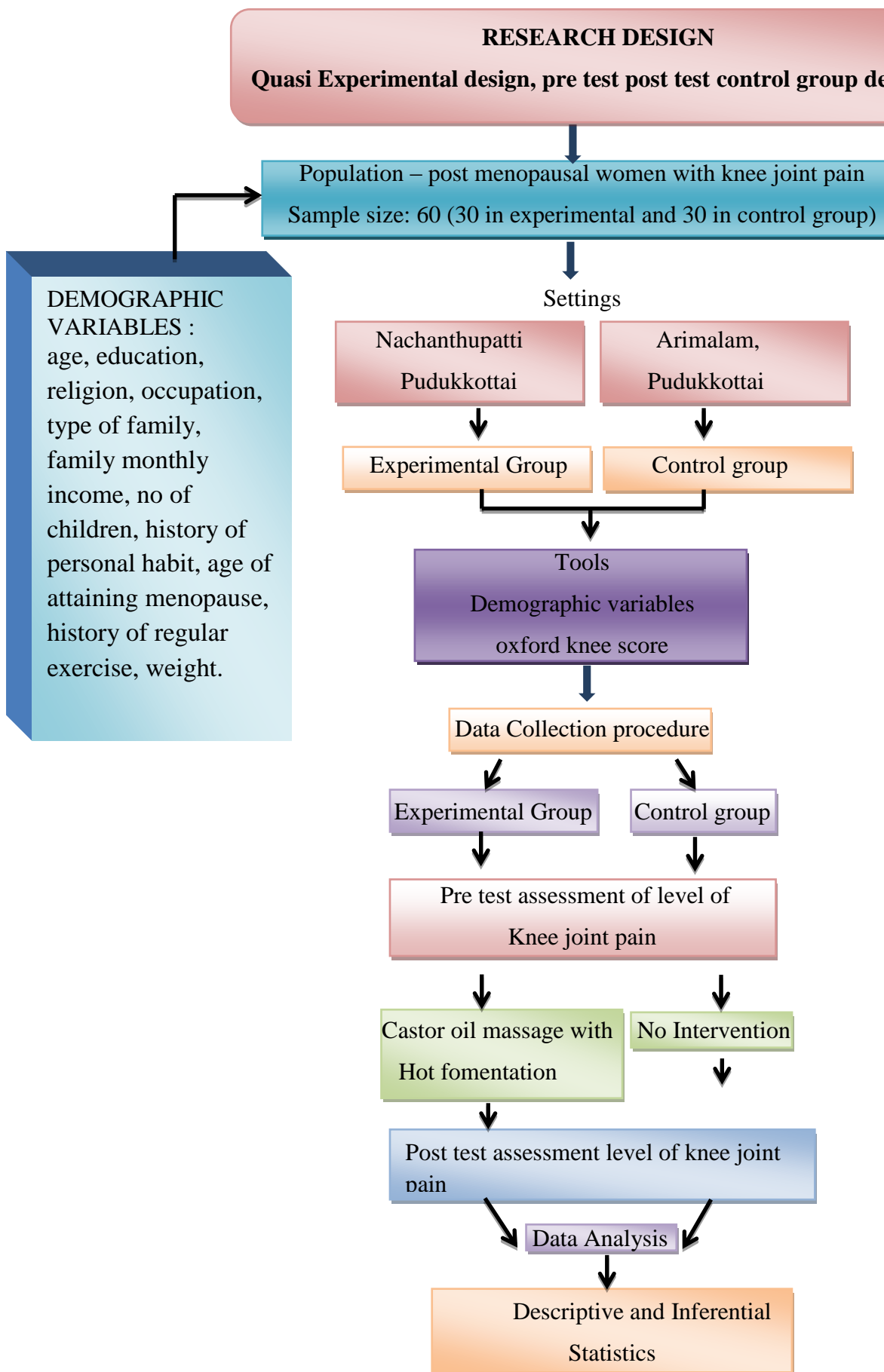


FIGURE 2: SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected from 60 post menopausal women (30 Experimental and 30 Control) at selected community area, Pudukottai.

The data collected was organized, tabulated and analyzed according to the objectives. The findings based on the descriptive and inferential statistical analysis are presented under the following sections.

OBJECTIVES:

- To assess the pre test level of knee joint pain among post menopausal women in the experimental group and control group.
- To assess the post test level of knee joint pain among post menopausal women in the experimental group and control group.
- To evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women in the experimental group.
- To find out the association between the post test level of knee joint pain with the selected demographic variables in the experimental group.

ORGANIZATION OF DATA

Section A: Description of demographic variables of post menopausal women with knee joint pain in experimental and control group.

Section B: Assessment of pretest and posttest level of knee joint pain among Post menopausal women in experimental and control group.

Section C: Comparison of pretest and post test level of knee joint pain among post menopausal women in experimental and Control group.

Section D: Association of post test level of knee joint pain among post menopausal women in experimental group with selected demographic in the experimental group .

SECTION A: DESCRIPTION OF DEMOGRAPHIC VARIABLES OF POST MENOPAUSAL WOMEN WITH KNEE JOINT PAIN IN EXPERIMENTAL AND CONTROL GROUP.

Table 1: Frequency and percentage distribution of demographic variables of post menopausal women with knee joint pain in experimental and control group.

N=60(30+30)

Demographic Variables	Experimental		Control	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Age in years				
40-50 years	11	36.6	8	26.7
51-60years	8	26.7	14	46.6
61-70years	8	26.7	8	26.7
71 and above	3	10	0	0
Education				
No formal education	13	43.3	15	50
Primary school	8	26.7	7	23.3
Higher secondary	7	23.3	6	20
Graduation	2	6.7	2	6.7
Religion				
Hindu	17	56.7	23	76.7
Muslim	9	30	5	16.6
Christian	4	13.3	2	6.7
Others	0	0	0	0

Occupation				
Home maker	18	60	26	86.7
Govt.Employee	4	13.3	0	0
Self employee	8	26.7	4	13.3
Retired	0	0	0	0
Type of family				
Joint family	14	46.7	18	60
Extended family	7	23.3	5	16.7
Nuclear family	5	16.7	6	20
Separated	4	13.3	1	3.3
Family monthly income				
Below Rs.3000	11	36.6	8	26.67
Rs. 3001-Rs.5000	2	6.7	7	23.33
Rs. 5001-Rs.10000	12	40	15	50
Above Rs.10000	5	16.7	0	0
No. of children				
One	6	20	3	10
Two	14	46.66	11	36.7
Three	8	26.7	15	50
More than three	2	6.7	1	3.3

History of personal habits				
No bad habits	16	53.3	27	90
Tobacco chewing	8	26.7	3	10
Intake of alcohol	6	20	0	0
Age of attaining menopausal				
45-50 years	18	60	19	63.3
51-55years	12	40	11	36.7
History of Exercise				
Yes	8	26.7	4	13.3
No	22	73.3	26	86.7
Weight				
45-55kgs	8	26.7	9	30
56-65kgs	10	33.3	15	50
Above 65kgs	12	40	6	20

The table 1 reveals that in the experimental group, majority 11(36.6%) were in the age group of 40 – 50 yrs; 13(43.3%) had no formal education,; the religion 17(56.7%) were Hindus; majority 18(60%) were home maker; 14(46.7%) were joint family; 11(36.6%) had monthly income of less than Rs.3000; 14(6.7%) had two children; 16(53.3%) had no bad habits; Regarding age of attending menopausal majority 18(60%) were 45-50 years of age; 22(73.3%) of post menopausal women not follow any exercise and 12(40%) had the weight above 65kgs.

Whereas in the control group, majority 14(46.6%) were in the age group of 51–60 yrs; 15(50%) had no formal education; 23(76.7%) were Hindus; 26(86.67%) were home; 18(60%) were joint family; 15(50%) had monthly income of Rs. 5001 -10000; 15(50%) had three children; 27(90%) had no bad habits; Regarding age attaining menopausal majority 19(63.3%) were 45-50 years of age, 26(86.7%) of post menopausal women not follow any exercise and 15(50%) had 56-65kgs of weight.

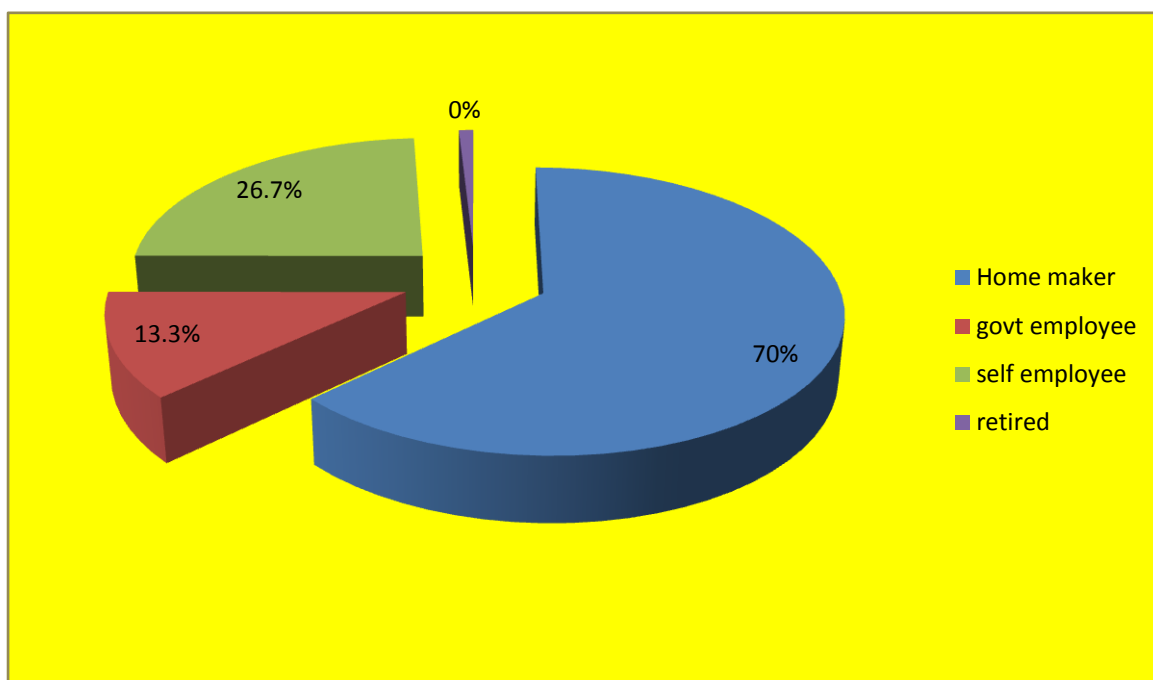


Figure 3: Percentage distribution of occupation among post menopausal women in the experimental group.

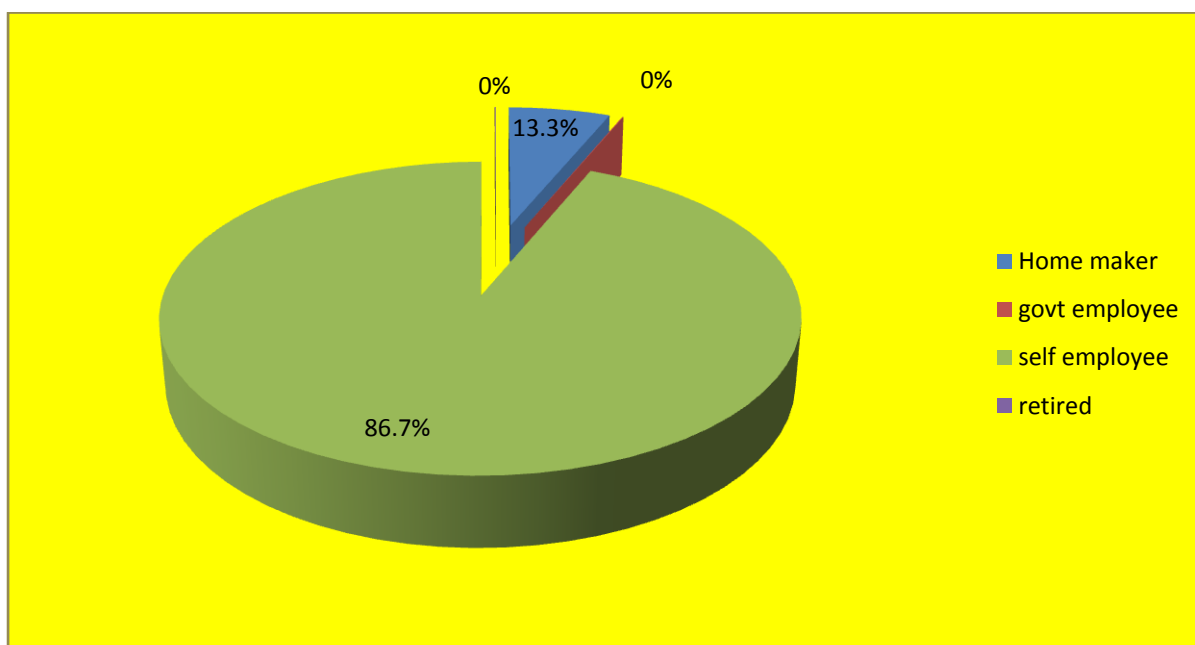


Figure 4: Percentage distribution of occupation among posts menopausal in the control group.

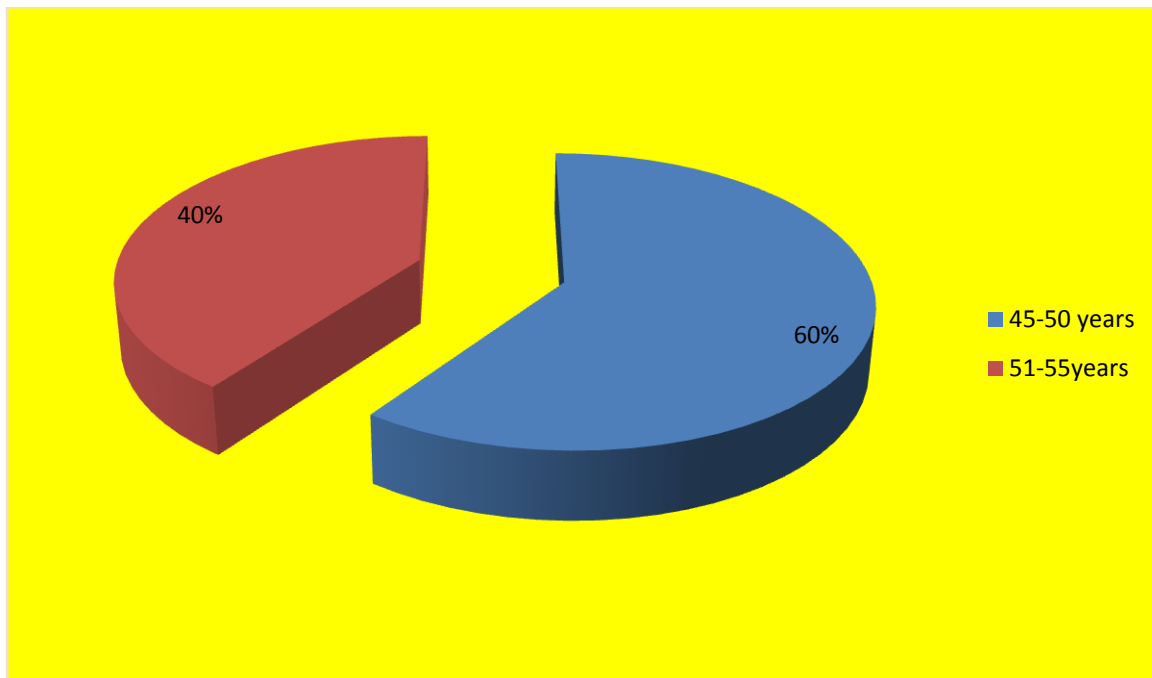


Figure 5: Percentage distribution of age of attaining menopause among post menopausal women in the experimental group

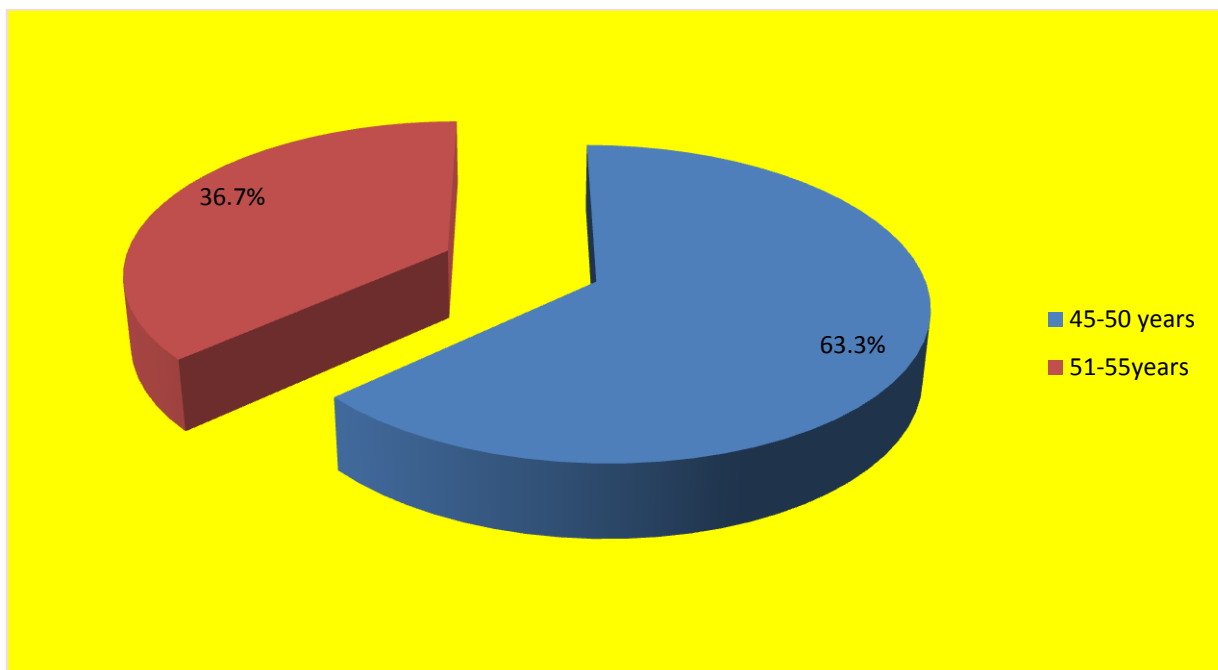


Figure 6: Percentage distribution of age of attaining menopause among post menopausal women in the control group

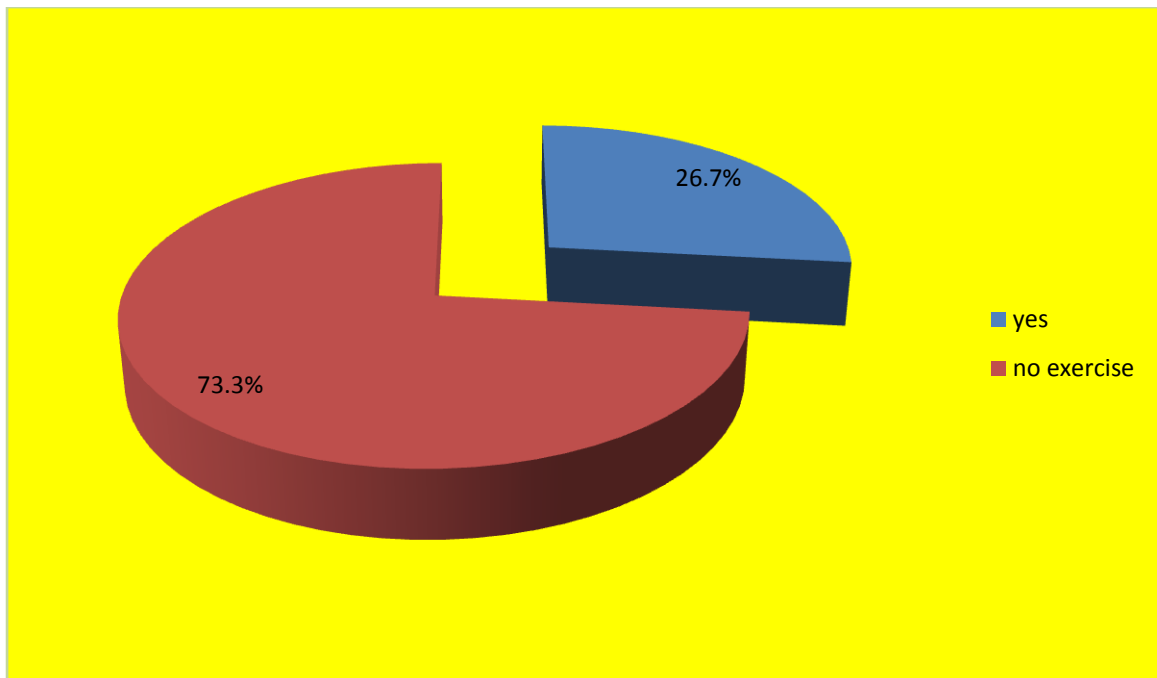


Figure 7: Percentage distribution history of exercise among post menopausal women in the experimental group

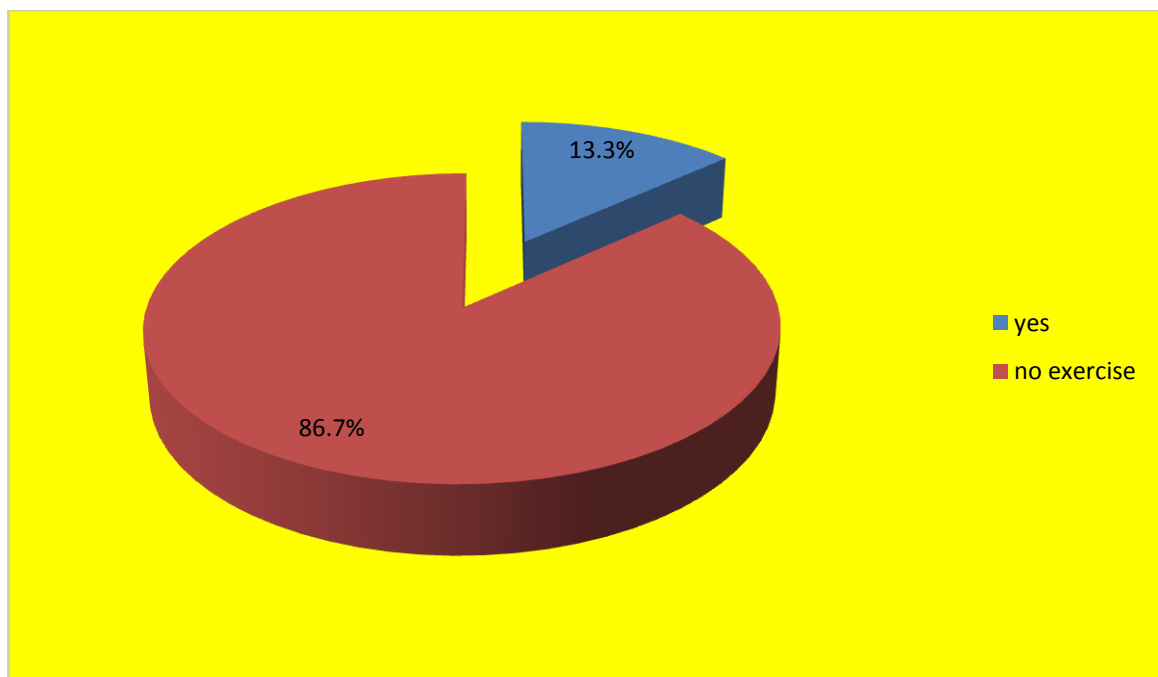


Figure 8: Percentage distribution history of exercise among post menopausal women in the control group

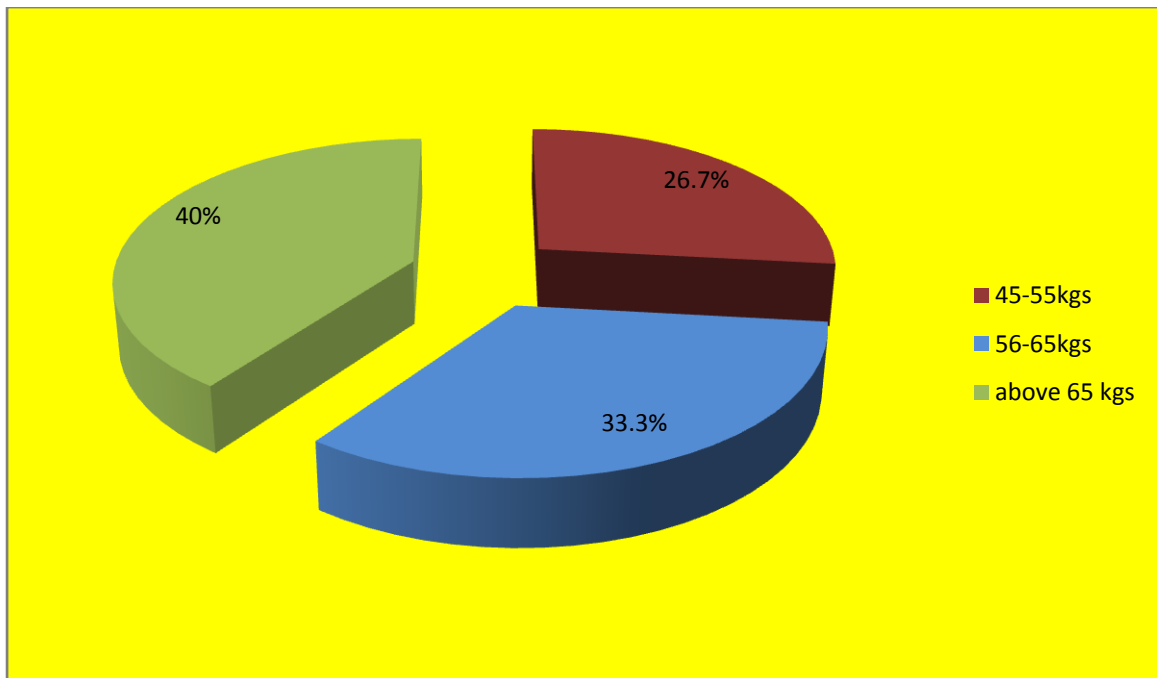


Figure 9: Percentage distribution of weight among post menopausal women in the experimental group

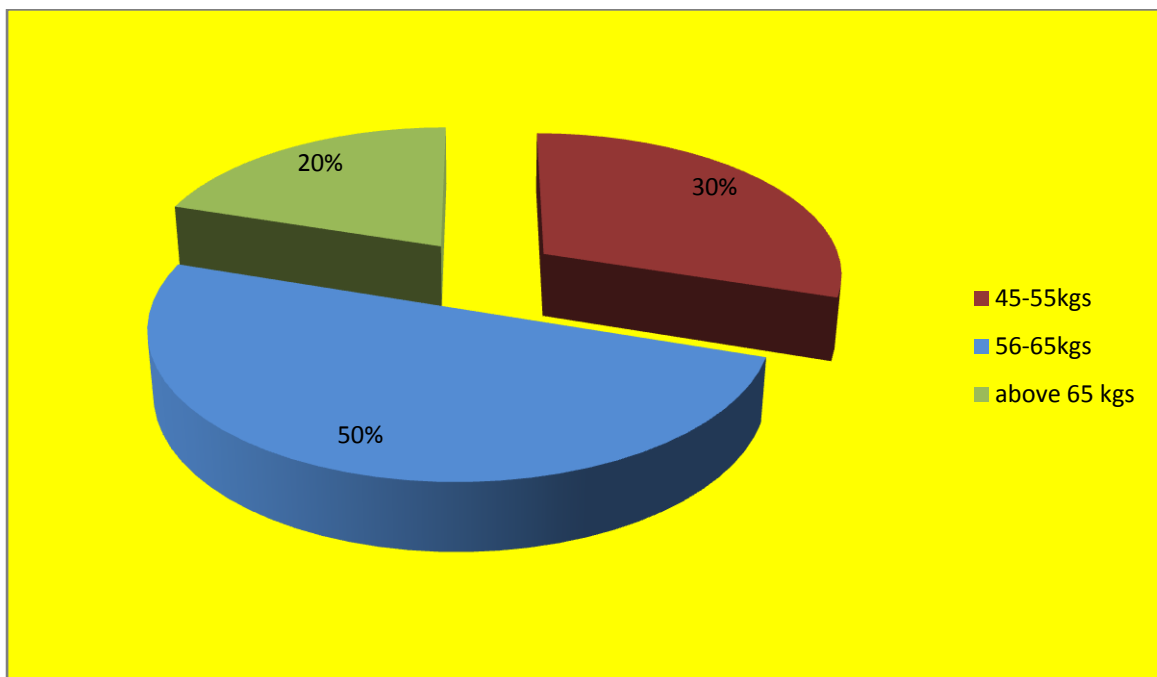


Figure 10: Percentage distribution of weight among post menopausal women in the control group

SECTION B: ASSESSMENT OF PRE TEST AND POST TEST LEVEL OF KNEE JOINT PAIN AMONG POSTMENOPAUSAL WOMEN IN EXPERIMENTAL AND CONTROL GROUP.

Table 2: Frequency and percentage distribution of pre test and post test level of knee joint pain among post menopausal women in the experimental group.

n=30								
Knee joint pain	Severe		Moderate		Mild		Normal	
	(0-19)		(20-29)		(30-39)		(40-48)	
	n	%	n	%	n	%	n	%
Pretest	7	23.3	19	63.3	4	13.4	0	0
Posttest	1	3.3	1	3.3	9	30	19	63.33

The table 2 reveals that the percentage distribution of pre test and post test level of Knee joint pain in the experimental group.

The analysis of pre test level of knee joint pain among post menopausal women in experimental group, revealed that majority 19(63.3%) had moderate level of knee joint pain, 7(23.33%) had severe level of knee joint pain 4(13.34%) had mild level of knee joint pain, and none of them have normal level.

Whereas in post test level of knee joint pain among post menopausal women in experimental group, revealed that majority 19(63.33%) had no knee joint pain, 9(30%) had mild level of knee joint pain and 1(3.33%) had moderate level of knee joint pain, and 1(3.33%) had severe level of knee joint pain.

Table 3: Frequency and percentage distribution of pre test and post test level knee joint pain among post menopausal women in the control group.

Knee joint pain	n=30							
	Severe		Moderate		Mild		Normal	
	(0-19)		(20-29)		(30-39)		(40-48)	
	n	%	n	%	n	%	n	%
Pretest	9	30	6	20	15	50	0	0
Posttest	7	23.3	8	26.7	15	50	0	0

The table 3 reveals that the percentage distribution of pre test and post test level of Knee joint pain in the control group.

The analysis of pre test level of knee joint pain among post menopausal women in control group revealed that majority 15(50%) had mild level of knee joint pain,9(30%) had severe level of knee joint pain and 6(20%) had moderate level of knee joint pain and 0(0%) had no pain.

Whereas the post test level of knee joint pain among post menopausal women in control group, revealed that majority 15(50%) had mild level of knee joint pain, 8(26.67%) had moderate level of knee joint pain, 7(23.33%) had severe level of knee joint pain and 0(0%) had no knee joint pain.

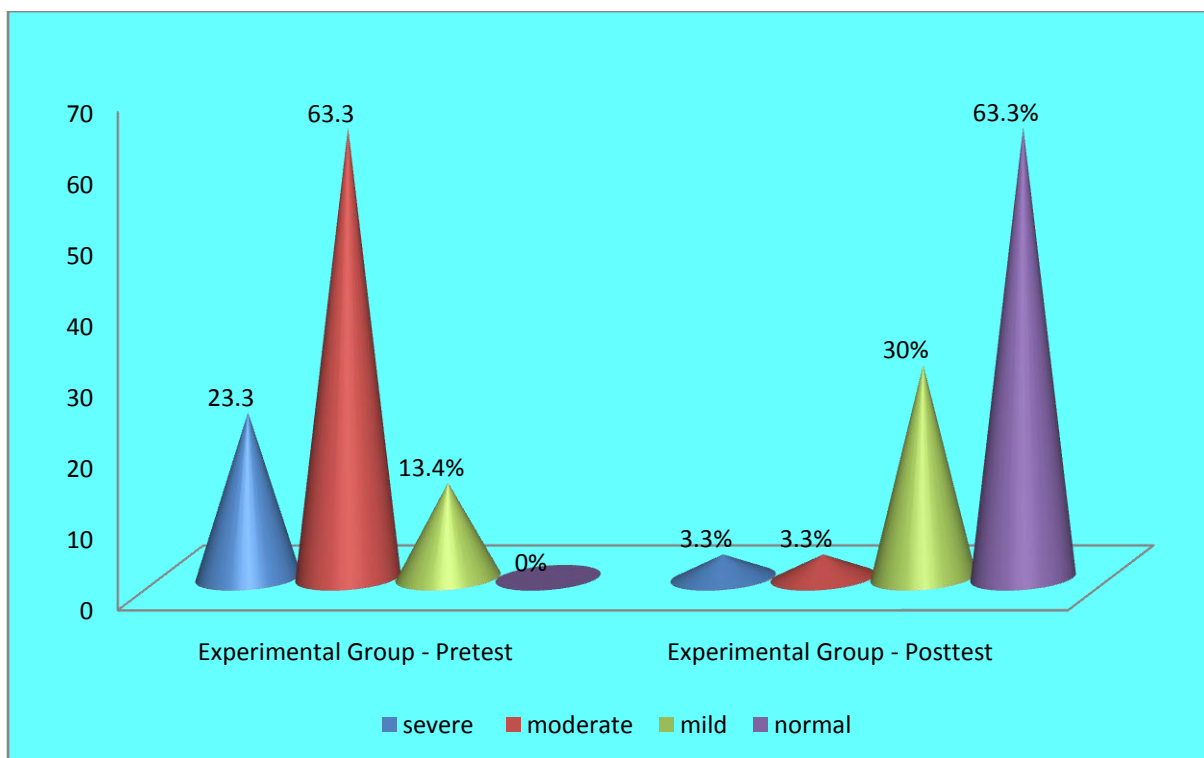


Figure 11 : Percentage distribution of pre test and post test level of knee joint pain among post menopausal women in experimental group.

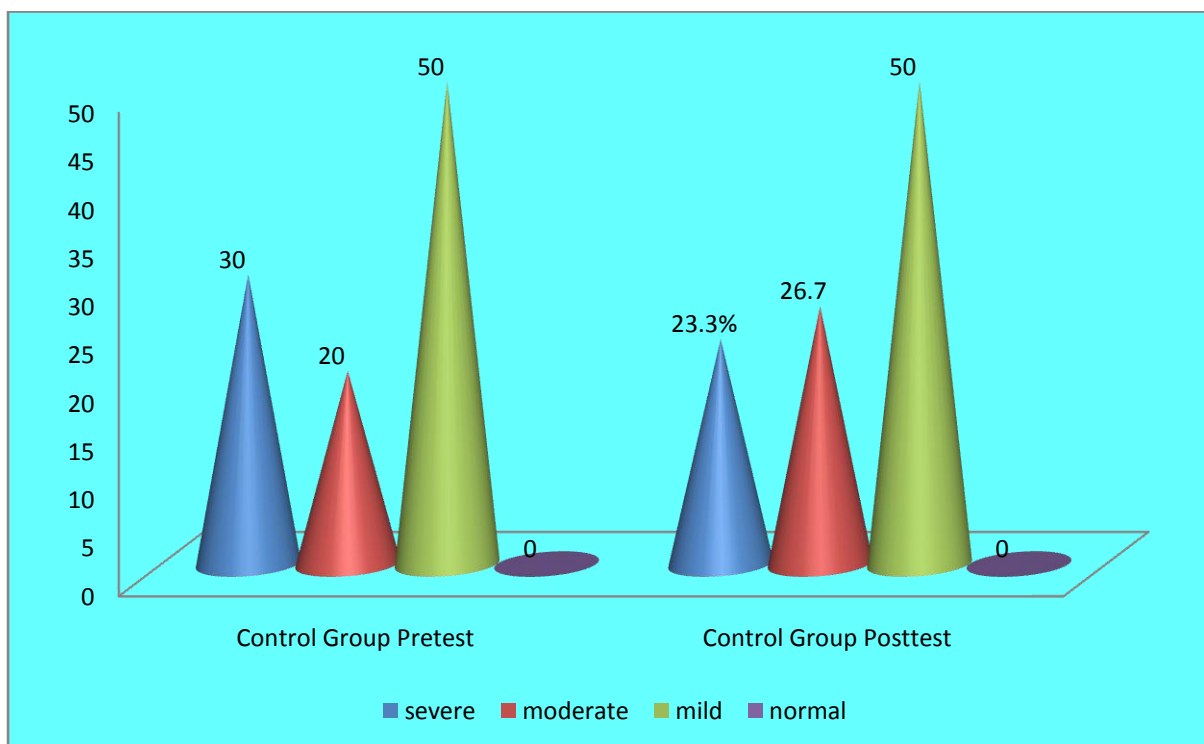


Figure 12 : Percentage distribution of pre test and post test level of knee joint pain among post menopausal women in control group

SECTION C: COMPARISON OF PRETEST AND POSTTEST LEVEL OF KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN IN EXPERIMENTAL AND CONTROL GROUP.

Table 4: Comparison of pre and post test level of knee joint pain among post menopausal women in experimental group.

n=30			
Knee joint pain	Mean	SD	‘t’ value
Pretest	22.87	6.506	17.065*
Posttest	39.47	6.832	

***p<0.001, Significant.

The table 4 shows the comparison of pre and post test level of knee joint pain among post menopausal women in experimental group.

The mean pre test value of knee joint pain among post menopausal women was 22.87 with S.D 6.506 and the mean post test value of knee joint pain was 39.47with S.D 6.832.

The calculated paired “t” value 17.065 was found to be statistically Significant at p<0.001 level.

This clearly shows that the application of castor oil massage with hot fomentation on knee joint pain among post menopausal women had significant reduction in their posttest level of knee joint pain among post menopausal women in the experimental group.

Table 5: Comparison of pre and post test level of knee joint pain among post menopausal women in control group.

n=30

Knee joint pain	Mean	SD	't' value
Pretest	26.67	10.001	1.795
Posttest	26.47	10.184	

P<0.001, Not Significant .

The table 5 shows the comparison of pre and post test level of knee joint pain among post menopausal women in control group.

The mean pretest value of knee joint pain among post menopausal women was 26.67 with S.D 10.001 and the mean post test value of knee joint pain was 26.47 with S.D 10.184.

The calculated paired "t" value 1.795 was not found to be statistically significant.

This clearly shows that there was no significant change in the pre test and post test level of knee joint pain among post menopausal women in the control group.

Table 6: Comparison of post test level of knee joint pain among Post menopausal women between the experimental and control group.

N=60(30+30)			
Post test	Mean	SD	Unpaired 't' value
Experimental	39.47	6.832	5.719*
Control	26.47	10.184	

**p<0.05, Significant.

Table 6 shows the comparison of post test level of knee joint pain between the experimental and control group.

When comparing the post test level of knee joint pain among post menopausal women between the experimental and control group, the post test mean score in the experimental group was 39.47with S.D 6.832 and the post test mean score in the control group was 26.47with S.D 10.184. The calculated unpaired “t” value 5.719 was found to be statistically significant at p<0.05 level.

This clearly indicates that after the administration of castor oil massage with hot fomentation on knee joint pain among post menopausal women had significant reduction in their post test level of knee joint pain among post menopausal women in experimental group than in the control group.

SECTION D: ASSOCIATION OF POSTTEST LEVEL OF KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN WITH SELECTED DEMOGRAPHIC VARIABLES.

Table 7: Association of post test level of knee joint pain among post menopausal with their selected demographic variables in experimental group.

										n=30
S.No	Demographic variables	Severe Pain		Moderate Pain		Mild Pain		Normal		χ^2 value p-value
		n	%	n	%	n	%	n	%	
1.	Age(in years)									
	40-45 years	1	3.33	0	0	2	6.67	8	26.67	5.684 (df=9) P=0.771 NS
	51-60 years	0	0	1	3.33	3	10	4	13.33	
	61-65 years	0	0	0	0	3	10	5	16.67	
	Above 71years	0	0	0	0	1	3.33	2	6.67	
2.	Education									
	No formal education	1	3.33	1	3.33	2	6.67	9	30	4.514 (df=9) P=0.874 NS
	Primary Education	0	0	0	0	3	10	5	16.67	
	Higher secondary	0	0	0	0	3	10	4	13.33	
	Graduate	0	0	0	0	1	3.33	1	3.33	
3.	Religion									
	Hindu	1	3.33	1	3.33	5	16.67	10	33.33	2.710 (df=6) P=0.926 NS
	Christian	0	0	0	0	2	6.67	7	23.33	
	Muslim	0	0	0	0	2	6.67	2	6.67	
	Others	0	0	0	0	0	0	0	0	
4.	Occupation									
	Home maker	1	3.33	1	3.33	6	20	10	33.33	1.930 (df=6) P=0.926 NS
	Government employee	0	0	0	0	1	3.33	3	10	
	Self-employee	0	0	0	0	2	6.67	6	20	
	Retired	0	0	0	0	0	0	0	0	

5. Type of Family										
Joint Family	1	3.33	1	3.33	2	6.67	10	33.33		
Extended Family	0	0	0	0	3	10	4	13.33	4.832	
Nuclear Family	0	0	0	0	2	6.67	3	10	(df=9)	
Separated	0	0	0	0	2	6.67	2	6.67	P=0.848	
									NS	
6. Family income monthly										
Below Rs.3000	0	0	0	0	3	10	8	26.67		
Rs.3001-5000	0	0	0	0	1	3.33	1	3.33	4.271	
Rs.5001-10000	1	3.33	1	3.33	4	13.33	6	20	(df=9)	
More than 10000	0	0	0	0	1	3.33	4	13.33	P=0.892	
									NS	
7. No. of Children										
One	1	3.33	0	0	2	6.67	3	10		
Two	0	0	1	3.33	3	10	10	33.33	6.295	
Three	0	0	0	0	3	10	5	16.67	(df=9)	
More than three	0	0	0	0	1	3.33	1	3.33	P=0.710	
									NS	
8. History of personal habits										
No bad habits	0	0	0	0	1	3.33	7	23.33		
Tobacco chewing	1	3.33	1	3.33	5	16.67	9	30	4.408	
Alcohol intake	0	0	0	0	3	10	3	10	(df=6)	
									P=0.621	
									NS	
9. Age of attaining menopause										
45-50 years	1	3.33	1	3.33	4	13.33	12	40	2.320	
51-55years	0	0	0	0	5	16.67	7	23.33	(df=3)	
									P=0.508	
									NS	

<hr/>										
10.	History of regular exercise									
	Yes	0	0	0	0	2	6.67	6	20	1.053
	No exercise	1	3.33	1	3.33	7	23.33	13	43.33	(df=3) P=0.788 NS
11.	Weight									
	45-55Kgs	0	0	0	0	1	3.33	1	3.33	
	56-65kgs	0	0	1	3.33	7	23.3	18	60	16.235* (df=6)
	Above 65kgs	1	3.33	0	0	1	3.33	0	0	P=0.012* NS
<hr/>										

*P<0.05, significant

The table 7 shows that the demographic variables weight of post menopausal women had shown statistically significant association with the post test level of knee joint at $p<0.05$ level among post menopausal women in the experimental group. And the other demographic variables had not shown statically significant association with the post test level of knee joint pain among post menopausal women in the experimental group.

CHAPTER V

DISCUSSION

Women have little autonomy, living under the control of first their father, then their husband and finally their sons. All of these factors exert a negative impact on the health status of Indian women. In that aspect knee joint pain is common symptom due to post menopausal among women. It needs careful evaluation and preventive care for women. Otherwise it leads to impaired quality of life and interfere with their daily lifestyle. Castor oil with hot fomentation is an effective method to reduce knee joint pain and improve the quality of life among women, thus it is simple, easy to practice and also it is easily available.

The purpose of this study was to evaluate the castor oil massage with hot fomentation on knee joint among postmenopausal women in selected community areas in Pudukkottai.

This chapter discussed the major findings of the study and reviews them in terms of result from other studies.

The first objective was to assess the pre test level of knee joint pain among post menopausal women in the experimental and control group

The analysis of pre test of level of knee joint pain in experimental group, revealed that majority 19(63.3%) had moderate level of knee joint pain, 7(23.33%) had severe level of knee joint pain and 4(13.34%) had mild level of knee joint pain, 0(0%) of normal level, whereas in the pre test level of knee joint pain in control group 15(50%) had mild level of knee joint pain, 9(30%) had severe level of knee joint pain and 6(20%) had moderate level of knee joint pain and 0(0%) of no pain.

These findings were supported by **Nikita H Chauhan (2017)** conducted a study related effectiveness of the hot application and castor oil. Application of hot

application and castor oil the Clients with joint Pain will reduce the level of pain. The researcher goes through various literature reviews, and that studies suggested that the hot application and castor oil application is helpful for reducing joint pain. Hence researcher recommended the hot application and castor oil application to reduce joint pain.

The findings of the study supports the investigators assumption, that the application of castor oil massage with hot fomentation will reduce the level of knee joint pain among post menopausal women.

The second objective was to assess the post test level of knee joint pain among post menopausal women in the experimental group and control group.

The analysis of post test of level of knee joint pain in experimental group, revealed that majority 19(63.3%) had no knee joint pain, 9(30%) had mild level of knee joint pain and 1(3.33%) had moderate level of knee joint pain, 1(3.33%) had severe level of knee joint pain. Where as in the control group 15 (50%) had mild level of knee joint pain, 8(26.67%) had moderate level of knee joint pain and 7(23.33%) had severe level of knee joint pain and 0 (0%) of no knee joint pain.

These findings were supported by **Tetik S et. al., (2013)** conducted a randomized controlled trial study was to evaluate the effects of the manual physical therapy methods conducted by superficial and deep heat treatments of primary bilateral knee osteoarthritis. A randomized, controlled trial was carried out. Eighty patients (160 knees) were included in the analysis. The patients were separated into two groups. Group I (n: 80 knees) performed daily physical therapy programs (ultrasounds, hot packs and exercises) in a period of fifteen days. Group II (n: 80knees) performed only daily exercise programs in this period pain was evaluated by visual analogue scale (VAS) and WOMAC pain scale. Stiffness and functional capacity were measured by WOMAC osteoarthritis index at baseline, at the third and sixteenth weeks. At the third and sixteenth weeks, significant improvement in VAS,

WOMAC were observed in both groups, when compared to baseline measures (Group I: $p < 0.01$, Group II: $p < 0.05$). At the sixteenth week, post test was conducted improvement was observed in both Group.

The findings of the study supports the investigators assumption, that the application of castor oil massage with hot fomentation will reduce the level of knee joint pain among post menopausal women.

The third objective was to evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women in the experimental group.

Comparison of mean pre test value of knee joint pain was 22.87 with S.D 6.506 and the mean post test value of knee joint pain was 39.47with S.D 6.832 in the experimental group. The calculated paired “t” value 17.065 was found to be statistically Significant at $p < 0.001$ level.

This clearly shows that the application of castor oil massage with hot fomentation on post menopausal women had significant improvement in their post test level knee joint pain among post menopausal women in the experimental group.

When comparing the post test level of knee joint pain between the experimental and control group, the mean post test score in the experimental group was 39.47with S.D 6.832 and the mean post test mean score in the control group was 26.47with S.D 10.184. The calculated unpaired “t”value 5.719 was found to be statistically significant at $p < 0.05$ level.

This clearly indicates that after the administration of castor oil massage with hot fomentation on knee joint pain among post menopausal women had significant reduction in their post test level of knee joint pain among post menopausal women in experimental group than the post menopausal women in the control group.

Kishore K et al., (2009) was conducted randomized, double-blind, comparative clinical study was to compare the safety and efficacy of castor oil with diclofenac sodium in patients with knee osteoarthritis. Subjects with symptoms of knee osteoarthritis were given a castor oil capsule 0.9 mL (n= 50) thrice daily for 4 weeks or a capsule of diclofenac sodium (n = 50), 50 mg thrice daily for 4 weeks. The subjects completed an overall evaluation of symptom relief at 2 weeks and 4 weeks of completed treatment. The subjects were evaluated by clinical, routine laboratory and radiographic investigations for improvement of disease conditions and also for adverse drug reaction. On completion of 4 weeks treatment it was observed that both drugs were significantly effective in the treatment knee osteoarthritis ($p < 0.001$) and adverse drug reactions were high with diclofenac sodium, whereas with castor oil there were no adverse effects reported. The study indicates that castor oil capsule can be used as an effective therapy in primary knee osteoarthritis.

The finding of the study supported the investigators assumption, that the application of castor oil massage with hot fomentation among post menopausal women will reduce the knee joint pain.

The fourth objective was to find out the association between the post test level of knee joint pain with their selected demographic variables in the experimental group.

The chi square value showed significance association between the level of knee joint pain among post menopausal women. The demographic variables weight of post menopausal women had shown statistically significant association with the post test level of knee joint at $p < 0.05$ level among post menopausal women in the experimental group. And the other demographic variables had not shown statically significant association with the post test level of knee joint pain among post menopausal women in the experimental group.

CHAPTER-VI

SUMMARY, CONCLUSION, IMPLICATION, LIMITATIONS AND RECOMMENDATION

This chapter presents the summary of the study and conclusion drawn from the study findings. It classifies limitation of the study, implication, recommendations in different areas like nursing practice, nursing education, nursing administration, nursing research and recommendation for the further study.

SUMMARY OF THE STUDY:

STATEMENT OF THE PROBLEM

“A quasi experimental study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected community areas in Pudukkottai.”

THE FOLLOWING OBJECTIVES WERE SET FOR THE STUDY:

1. To assess the pre test level of knee joint pain among post menopausal women in the experimental group and control group.
2. To assess the post test level of knee joint pain among post menopausal women in the experimental group and control group.
3. To evaluate the effectiveness of castor oil massage with hot fomentation among post menopausal women in the experimental group.
4. To find out the association between the post test level of knee joint pain with the selected demographic variables in the experimental group.

HYPOTHESES:

H1: There will be a significant difference between the pre and post test level of knee joint pain among post menopausal women in experimental group.

H2: There will be a significant difference in pre test and post test level of knee joint pain among post menopausal between the experimental group and control group.

H3: There will be a significant difference in the level of knee joint pain among post menopausal women after application of castor oil massage with hot fomentation in experimental group.

H4: There will be a significant association between the post test level of knee joint pain among post menopausal women with these selected demographic variables.

The conceptual model of the study was based on the Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory. The study was conducted with pretest- post test control group design. Non probability Purposive sampling was used to select the study sample. The instrument used for data collection was oxford knee score.

The data analyzed and interpreted in terms of objectives and research hypothesis. Descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (paired and unpaired "t" test) and the chi square were used to the research hypotheses.

MAJOR FINDINGS OF THE STUDY:

- In the experimental group, majority 11(36.6%) were in the age group of 40 – 50 yrs; 13(43.3%) had no formal education; the religion 17(56.7%) were Hindus; majority 18(60%) were home maker; 14(46.7%) were joint family; 11(36.6%) had monthly income of less than Rs.3000; 14(43.3%) had two children; 16(53.3%) had no bad habits; Regarding age of attending menopausal majority 18(60%) were 45-50 years of age; 22(73.3%) were dose not follow any exercise and 12(40%) had the weight above 65kgs. Whereas in the control group, majority 14(46.6%) were in the age group of 51– 60 yrs; 15(50%) had no formal education; 23(76.7%) were Hindus; 26(86.67%) were home; 18(60%) were joint family; 15(50%) had monthly income of Rs. 5001 -10000; 15(50%) had three children; 27(90%) had no bad habits; Regarding age attending menopausal majority 19(63.3%) were 45-50 years of age, 26(86.7%) were dose not follow any exercise and 15(50%) had 56-65kgs of weight.
- The analysis of the pre test level of knee joint pain in experimental group, revealed that 19(63.3%) had moderate level of knee joint pain, 7(23.33%) had severe level of knee joint pain and 4(13.34%) had mild level of knee joint pain, 0(0%) of normal level. Whereas the post test level of knee joint pain in experimental group, revealed that 19(63.3%) had no knee joint pain, 9(30%) had mild level of knee joint pain and 1(3.33%) had moderate level of knee joint pain, 1(3.33%) had severe level of knee joint pain.
- The analysis of the pre test level of knee joint pain in control group revealed that 15(50%) had mild level of knee joint pain, 9(30%) had severe level of knee joint pain and 6(20%) had moderate level of knee joint pain and 0(0%) had no pain. Whereas the post test level of knee joint pain in control group, revealed that 15(50%) had mild level of knee joint pain, 8(26.67%) had moderate level of knee

joint pain and 7(23.33%) had severe level of knee joint pain and 0 (0%) of no knee joint pain.

- Regarding the comparison of pre test and post test level of knee joint pain mean score among post menopausal women in experimental group using paired 't' test revealed that the "t" value was 17.065 was found to be statistically Significant at $p < 0.001$ level. It was inferred that the castor oil massage with hot fomentation was significantly effective to reduce the level of knee joint pain among post menopausal women. Whereas the comparison of mean pretest and post test score of knee joint pain among post menopausal women in control group using paired 't' test revealed that the "t" value 1.795 which showed there was significant between the pretest and post test level of knee joint pain among post menopausal women in the control group.
- The comparison of post test level of knee joint pain between the experimental and control group the calculated unpaired "t" value of $t = 5.719$ was found to be statistically significant at $p < 0.05$ level.
- The chi square test revealed that there was significant association between the level of knee joint pain among post menopausal women. The demographic variable weight of post menopausal women shows statistically significant association with post test level of knee joint pain at $p < 0.05$ level among post menopausal women in the experimental group and the other demographic variables had not statically significant association with the post test level of knee joint among post menopausal women in the experimental group.

CONCLUSION:

1. Castor oil massage with hot fomentation was more effective to reduce the level of knee joint pain among post menopausal women
2. It was proved to be an effective in non pharmacological management to reduce the knee joint pain.

NURSING IMPLICATION:

1. The findings of the present study support that, castor oil massage with hot fomentation was found to be very safe, and easily available.
2. Castor oil massage with hot fomentation was found to be effective non pharmacological management to reduce the knee joint pain.
3. The findings of the study have several implications for the following fields.

IMPLICATIONS FOR NURSING PRACTICE:

1. The findings of the study enlighten the fact that castor oil massage with hot fomentation therapy can be used to reduce the knee joint pain among post menopausal women.
2. The study findings will help the nursing personnel to include castor oil massage with hot fomentation as one of the nursing intervention in the management of pain among the post menopausal women.
3. The nurse should contribute towards evidence based practice through the experience gained from the application of castor oil massage with hot fomentation while caring for post menopausal women with knee joint pain.

IMPLICATIONS FOR NURSING EDUCATION:

1. The effectiveness of castor oil massage with hot fomentation in reducing knee joint pain can be included in complementary therapy.
2. Nursing students can enhance their knowledge by including castor oil massage with hot fomentation as a home remedy in the community health nursing.
3. This can be published in the nursing journals to make awareness among the nursing students.

4. This procedure can be used as an example by the nurse educator in the class room, when giving instructions regarding complementary therapies.
5. Nursing students can demonstrate the knee joint pain among postmenopausal women to use castor oil massage with hot fomentation to reduce knee joint pain as self care management.

IMPLICATIONS FOR NURSING ADMINISTRATION

1. Nurse administrators can create awareness among community health nurse and enlighten their knowledge about the importance of castor oil massage with hot fomentation among post menopausal women.
2. Nurse administrator can instruct the staff nurses to encourage the post menopausal women with knee joint pain to use castor oil massage with hot fomentation.

IMPLICATIONS FOR NURSING RESEARCH:

1. Nurse researcher can be conducting the research by comparing the castor oil massage with hot fomentation with other complementary therapies.
2. Nurse researcher can apply the castor oil massage with hot fomentation for all type of client with knee joint pain.
3. Nurse researcher can do this study with large population to generalize the results.
4. Nurse researcher can do this study by comparing castor oil massage with hot fomentation with other home remedies.

LIMITATIONS:

1. The study was limited to evaluate the effectiveness of castor oil massage with hot fomentation only on knee joint pain among post menopausal women.
2. The administration of castor oil massage with hot fomentation has limited only to a period of 7 days.

RECOMMENDATION:

1. The study could be conducted by using large population to generalize the results.
2. A comparative study can be conducted between urban and rural community areas.

REFERENCES

BOOKS.

- Black M. Joyce, Hawks Hokanson Jane. (2005). **“Textbook of Medical Surgical Nursing”** .8 th ed. Missouri: Saunder’s publishers.
- Brunner & Suddharth. (2017), **“Textbook of Medical Surgical Nursing”**. New Delhi: Lippincott Publishers.
- Polit, D.F.& Hungler B.P(2004). **“Nursing Research Principles and Methods”**, 5th edition J.B. Lippincott company, Philadephia.
- Clement S S. (2002), **“Comprehensive Community Health Nursing Family, Aggregate & Community Practice.”** 5th edition. Missouri: Mosby Publications; J.B. Lippincott Company, Philadelphia.
- Joyce M. Black & Jane Hokanson Hawks (2005), **“Medical Surgical Nursing,”** WB. Saunders Company, Philadelphia.
- Kamalam .S (2005) **“Essential in Community Health Nursing”** Jaypee brothers Publication ,New Delhi.
- Lewis, Hiet Kemper & Dirkson (2004). **“Textbook of Medical Surgical Nursing”**, Mosby Publications, Philadelphia.
- Luckman & Soronsen`s (2001). **“Medical Surgical Nursing Psycho PhysiologicApproach”**, WB. Saunders Company, Philadelphia.
- Park.k, **“Text Book of Preventive and Medicine”**, Social Jabalpur, Banarsidas Bhanot Publication,
- Potter A. Perry Griffin Anne (2001).”**Fundamentals of Nursing”**, Mosby Publications, London.

- Prabakara GN (2002) “**Text Book of Preventive and Social Medicine**”, Jaypee brothers publication, New Delhi.
- Ross & Wilson (2002). “**Textbook of Anatomy and Physiology in Health and Illness**”, Livingstone Company, Philadelphia.
- Sunder Rao, P.S., Richard J (1999). “**An Introduction to - Biostatistics A Manual for Students in Health Science**”, Lippincott Company, Philadelphia.
- Sunita Patney (2005) “**TextBook of Community Health Nursing,**” modern, Publication, New Delhi.

JOURNALS

- Annalsoftherheumaticdiseases.(2014)Feb19:annrheumdis2013ard.bmj.com/content/early/2014/02/19/annrheumdis-204763.
- Archana.T (2018) Comparative study to assess the effect of conventional physiotherapy and additional yoga undergone knee arthroplasty due to osteoarthritis.
- Gilcy George (2011) Experimental study to evaluate effectiveness of camphor oil in the reduction of joint pain in Kerala.
- Martel-Pelletier J, Boileau (2008).C, Pelletier J P and Roughley P J. Cartilage in normal and osteoarthritis conditions.. Vol.22 no.1.
- Nabarun_Karmakar (2017) Quality of life among menopausal women: A community-based study in a rural area of West Bengal. Best Practical Research in Clinical Rheumatology
- Nikitha H Chauhan (2018) Effectiveness of the Hot Application and Castor Oil Application in Clients

- P.P.Venugopalan, (2015) Study of menopausal symptoms, and perceptions about menopause among women at a rural community in Kerala
- Parminder Kaur, Indrajit Walia. et al.(2007) Study on intensity of knee joint pain by 'Application of Moist Heat' among geriatric population(>60years of age).Nursing and Midwifery Research Journal. october; Vol3, No.4 <http://medind.nic.in/nad/t07/i4/nadt0f>
- Patel MM. (2011) An epidemiological survey of arthritis in the population of North Gujarat,India. International Journal of Pharmaceutical Sciences and Research. Feb 1;2(2):325
- Poomalar G.K (2013) the cross sectional study health status of post menopausal women in Puducherry.
- Priya kapur et al (2009) onset of natural menopausal and prevalence of symptoms among women with Joint Pain-Literature Review Article · January 2017 DOI: 10.5958/2320- 8651.2017.00015.1
- Sajith et.al ., (2014) Indian Joirnel for continuning Nursing education vol.15,No.(2) july December 2014
- Missiriya S. (2015) Effectiveness of castor oilmassage with hot application on knee joint painamong women. Education. Sep;25(40):50.
- S.Diviya Experimental study to assess the effectiveness of mustard plaster application up on knee joint pain selected community area in Chennai.
- S.Selvia Rooppa (2015) A study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women Article · January DOI: 10.5958/2320-8651.2017.00015.1.

- Saline Lisa cyraic (2016) descriptive study about menopausal problem among post menopausal women
- Salve H, Gupta V, Palanivel C, Yadav K, SinghB. (2010) Prevalence of knee osteoarthritis amongst perimenopausal women in an urban resettlement colony in South Delhi. Indian journal of public health. Jul 1;54(3):155.
- Sankar Amritar (2014) cross sectional study about health profile of post menopaualsal women in Gujarath with Joint Pain-Literature Review Article · January DOI: 10.5958/2320- 8651.2017.00015.1
- Seto H, Ikeda H, Hisaoka H, Kurosawa H. (2008) Effect of heat-and steam-generating sheet on daily activities of living in patients with osteoarthritis of the knee: randomized prospective study. Journal of Orthopaedic Science.
- Shereif WI, Hassanin AA. (2011) Comparison between uses of therapeutic exercise and heat application on relieve pain, stiffness and improvement of physical function for patient with kneeosteoarthritis.
- Yýldýrým N, Filiz Ulusoy M, Bodur H. (2010) The effectof heat application on pain, stiffness, physicalfunction and quality of life in patients with kneeosteoarthritis. Journal of clinical nursing

NET REFERENCE

- www.pubmed.com
- www.ncbi.com
- www.cochranelibrary.com
- www.medicaldictionary.com
- www.applolife .com

- [http://www.journaloforthopaedicscience.com/article/S0949-2658\(15\)32261-2/abstrac](http://www.journaloforthopaedicscience.com/article/S0949-2658(15)32261-2/abstrac)
- <https://www.ncbi.nlm.nih.gov/pubmed/20492056>
- www.lifesciencesite.com/ljsj/life0803/062_6715life0803_388_396.pdfMAS
- https://www.researchgate.net/publication/282348641_Effectiveness_of_castor_oil_massage_with_hot_application_on_knee_joint_pain_among_women
- <http://ijph.in/article.asp?issn=0019557X;year=2010;volume=54;issue=3;spage=155;epage=157;aulast=Salve>
- <http://Ijpsr.Com/Bft-Article/An-Epidemiological-Survey-Of-Arthritis-In-The-Population-Of-North-Gujarat-India/>
- <http://ard.bmj.com/content/early/2014/02/19/annrheumdis-2013-204763.abstract>

APPENDICES

APPENDIX-A

DESCRIPTION OF THE TOOL

SECTION a-DEMOGRAPHIC VARIABLES

Kindly answer the following,

1. Age (in years)

- a. 40 -50 years
- b. 51 – 60 years
- c. 61 – 70 years
- d. Above 70 years

2. Education

- a. No formal education
- b. Up to primary
- c. Up to Higher
- d. Graduation

3. Religion

- a. Hindu
- b. Muslim
- c. Christian
- d. Others

4. Occupation

- a. Home maker
- b. Govt. Employee
- c. Self employee
- d. Retired

5. Type of family

- a. Joint family
- b. Extended family
- c. Nuclear family
- d. Separated

6. Family income (monthly)

- a. Below Rs.3000
- b. Rs.3001 – Rs.5000
- c. Rs.5001 – Rs.10000
- d. More than Rs.10000

7. Number of children

- a. One
- b. Two
- c. Three
- d. More than three

8. History personal habits

- a. No bad habits
- b. Tobacco chewing
- c. Alcohol intake

9. Age of attaining menopause

- a. 40 – 45
- b. 46 – 50

10. History of regular exercise

- a. Yes
- b. No exercise pattern

11. Weight

- a. 45-55 kgs
- b. 56-65 kgs
- c. Above 65 kgs

பிரிவு – அ

அடிப்படை விவரங்களை அறியும் நேர்காணல் படிவம்

1. வயது வருடங்களில்

- அ) 40 – 50 வயது வருடங்களில்
- ஆ) 51 – 60 வயது வருடங்களில்
- இ) 61 – 70 வயது வருடங்களில்
- ஈ) 70 வயதுக்கு மேல்

2. கல்வி நிலை

- அ) அடிப்படை கல்வி இல்லை
- ஆ) துவக்க கல்வி
- இ) மேல்நிலை கல்வி
- ஈ) பட்டதாரி

3. மதம்

- அ) இந்து
- ஆ) முஸ்லீம்
- இ) கிருஸ்தவர்
- ஈ) மற்றவை

4. தொழில்

- அ) வீட்டுவேலை
- ஆ) அரசு வேலை
- இ) சுயதொழில்
- ஈ) ஓய்வு பெற்றவர்

5. குடும்பநிலை

- அ) கூட்டுக்குடும்பம்
- ஆ) விரிவுபடுத்தப்பட்ட குடும்பம்
- இ) தனிகுடும்பம்
- ஈ) தனித்து வசிப்பவர்

6. குடும்ப மாத வருமானம்
- அ) ரூ.3000-க்கு குறைவு
 - ஆ) ரூ.3001-க்கு மேல் 5000க்குள்
 - இ) ரூ.5001-க்கு மேல் 10000க்குள்
 - ஈ) ரூ.10000க்கு மேல்
7. குழந்தைகளின் எண்ணிக்கை
- அ) ஒன்று
 - ஆ) இரண்டு
 - இ) மூன்று
 - ஈ) மூன்றுக்கு மேல்
8. பழக்க வழக்கங்கள்
- அ) புகையிலை பழக்கம்
 - ஆ) மது
 - இ) மது அடிமை
9. மாதவிடாய் நிறுத்தம் அடைந்த வயது
- அ) 40 லிருந்து 45
 - ஆ) 45 லிருந்து 50
10. உடற்பயிற்சி செய்வதுண்டா?
- அ) ஆம்
 - ஆ) இல்லை
- 11.எடை
- அ) 45-55
 - ஆ) 56-65
 - இ) 65 மேல்.

SECTION- b: TOOL FOR ASSESSING KNEE JOINT PAIN

OXFORD KNEE SCORE

Please answer the questions;

1. How would you describe the pain you usually have in your knee?
 - a) None
 - b) Very mild
 - c) Mild
 - d) Moderate
 - e) Severe
2. Have you had any trouble washing and drying yourself (all over) because of your knee?
 - a) No trouble at all
 - b) Very little trouble
 - c) Moderate trouble
 - d) Extreme difficulty
 - e) Impossible to do
3. Have you had any trouble in and out of the car or using public transport because of your knee? (with or without a stick)
 - a) No trouble at all
 - b) Very little trouble
 - c) Moderate trouble
 - d) Extreme difficulty
 - e) Impossible to do

4. For how long are you able to walk before the pain in your knee becomes severe?
(with or without stick)
- a) No pain > 60 min
 - b) 16 – 60 minutes
 - c) 5 – 15 minutes
 - d) Around the house only
 - e) Not at all – severe on walking
5. After a male (sat at a table), how painful has it been for you to stand up from a chair because of your knee?
- a) Not at all painful
 - b) Slightly painful
 - c) Moderately pain
 - d) Very painful
 - e) Unbearable
6. Have you been limping when walking, because of your knee?
- a) Rarely / never
 - b) Sometimes or just at first
 - c) Often, not just at first
 - d) Most of the time
 - e) All of the time

7. Could you kneel down and get up again afterwards?
- a) Yes, easily
 - b) With little difficulty
 - c) With moderate difficulty
 - d) With extreme difficulty
 - e) No, impossible
8. Are you troubled by pain in your knee at night in bed?
- a) Not at all
 - b) Only one or two nights
 - c) Some nights
 - d) Most nights
 - e) Every night
9. How much has pain from your knee interfered with your usual work? (including housework)
- a) Not at all
 - b) A little bit
 - c) Moderately
 - d) Greatly
 - e) totally
10. Have you felt that your knee might suddenly give away or let you down?
- a) Rarely / Never
 - b) Sometimes or just at first
 - c) Often, not at first
 - d) Most of the time
 - e) All the time

11. Could you do household shopping on your own?

- a) Yes, easily
- b) With little difficulty
- c) With moderate difficulty
- d) With extreme difficulty
- e) No, impossible

12. Could you walk down a flight of stairs?

- a) Yes, easily
- b) With little difficulty
- c) With moderate difficulty
- d) With extreme difficulty
- e) No, impossible

பிரிவு – ஆ

Oxford Knee Score

குறிப்பு

ஆராய்ச்சியாளர் பின்வரும் அனைத்து தகவல்களையும் பங்கேற்பவர்களிடமிருந்து சேகரித்து மிகவும் பொருத்தமான பதில்களுக்கு () என்ற குறியை இடுவர்.

1. தங்கள் மூட்டுவலி பொதுவாக எவ்வாறு உள்ளது?
 - அ) வலி இல்லை
 - ஆ) சிறு வலியுள்ளது
 - இ) வலியுள்ளது
 - ஈ) அதிக வலியுள்ளது
2. தங்களுக்கு துணிதுவைக்கும் போது அல்லது உலர செய்யும்போது மூட்டுவலி எவ்வாறு உள்ளது?
 - அ) அப்படி வலி ஒன்றும் இல்லை
 - ஆ) சிறிய கஷ்டம் உள்ளது
 - இ) அதிகமாக கஷ்டம் உள்ளது
 - ஈ) வேலை செய்யவே முடியவில்லை
3. தங்களுக்கு வாகனத்தில் ஏறும் போதோ அல்லது இறங்கும்போதோ மூட்டுவலி ஏற்படுகிறதா? கம்புடன் செல்லும்போதும் அல்லது இல்லாத போதும்
 - அ) எந்த கஷ்டமும் இல்லை
 - ஆ) சிறு வலியுள்ளது
 - இ) மிக அதிகமான கஷ்டம் உள்ளது
 - ஈ) ஏற இறங்க முடியவில்லை
4. அதிக மூட்டுவலி ஏற்படும் முன் தங்களுக்கு எவ்வளவு தூரம் நடக்க இயலும்?
 - அ) குறைந்த அளவு 60 வினாடி
 - ஆ) 16 – 60 நிமிடம்
 - இ) வீட்டை சுற்றிலும் மட்டும் நடக்க இயலும்
 - ஈ) என்னால் நடக்கவே இயலாது, தீவிர வலியினால் என்னால் ஒருபோதும் நடக்க இயலாது
5. உணவு அருந்திவிட்டு நாற்காலியிலிருந்து எழும்பும்போது தங்கள்கால் மூட்டுவலி எவ்வாறு உள்ளது?
 - அ) வலி இல்லை
 - ஆ) சிறிய அளவு வலியுள்ளது
 - இ) அதிகமாகிறது
 - ஈ) மிகவும் வலியாக உள்ளது
 - உ) தாங்க முடியாத வலியாக உள்ளது
6. தாங்கள் நடக்கும்போது மூட்டுவலியால் நொண்டி நொண்டி நடக்க நேரிடுகிறதா?
 - அ) அபூர்வம் / இல்லை

- ஆ) சிலவேலை / முதலில்மட்டும்
- இ) அடிக்கடி / முதலில் மட்டும்
- ஈ) அதிகமான நேரங்களில் உள்ளது
- உ) எப்போதும் உள்ளது

7. தாங்களுக்கு முழங்கால் இடும்போதும், எழும்பும்போதும் வலி ஏற்படுகிறதா?

- அ) சுபலமாக எழுப்ப முடிகிறது.
- ஆ) சற்று கடினமாக உள்ளது.
- இ) வலி அதிகரிக்கிறது
- ஈ) மிகவும் கடின வலி ஏற்படுகிறது

8. தாங்களுக்கு இரவு நேரத்தில் மூட்டு வலியால் அவதிபடநேருகிறதா?

- அ) இல்லை
- ஆ) ஒன்று அல்லத இரண்டு நாட்கள்
- இ) சில இரவுகளில்
- ஈ) அதிகமான இரவு நேரங்களில் வலி

9. தாங்களுடைய அன்றாட வேலைகளில் மூட்டுவலி எந்தஅளக்கு சிரமப்படுத்துகிறது.

- அ) அப்படி இல்லை
- ஆ) சில நேரம் இல்லை
- இ) அதிகமாகிறது
- ஈ) ரொம்ப வலி ஏற்படுகிறது
- உ) எப்போதும்

10. நீங்கள் நடக்கும்போது முழங்கால் தடுமாற்றம் ஏற்படுவதாக உணருகிறீர்களா?

- அ) அபூர்வமாக / இல்லை
- ஆ) சிலவேலைகளில் / துவக்கத்தில் மட்டும்
- இ) அடிக்கடி, துவக்கத்தில் இல்லை
- ஈ) பலநேரங்களில்
- உ) எப்போதும்

11. தாங்கள் தங்கள் வீட்டு தேவையான பொருட்கள் வாங்கிவரமுடிகிறதா?

- அ) கடினம் இல்லை
- ஆ) கொஞ்சம் கடினம்
- இ) அதிகரிக்கிறது
- ஈ) மிக கடினமாக உள்ளது

12. தாங்களால் படிக்கட்டுகளில் ஏறி இறங்க முடிகிறதா?

- அ) பரவாயில்லை
- ஆ) சற்று கடினம்
- இ) மிக கடினம்
- ஈ) மிக மிக கடினம்

APPENDIX-C

PROCEDURE OF CASTOR OIL MASSAGE WITH HOT FOMENTATION

Application of Castor oil

Apply 5ml of castor oil over the knee joint. And follow by the various steps of massage described below.

STEPS OF MASSAGE

Massage

Massage has been defined as “mechanical manipulation of body tissues with rhythmical pressure and stroking for the purpose of promoting health and wellbeing”.

Stroking

- Stroking is a gentle sliding of the hands over the skin.
- Stroking is used at the beginning of a session, to enable the researcher to get a sense of the client body sensitivity, and help the pores open.

Skin Rolling

- Skin rolling is a technique by which the skin is lifted and rolled between the fingers and thumbs of both hands.

Hacking

- During the hacking movement, the researcher hands are held outstretched with the fingers and thumb outstretched from the arm and in loose contact with each other.
- The movement is actioned from the wrists and not from the elbows.

- Both hands are used to strike the client's body alternately.
- Both hands work on the same area of the client, rotating so as to just clear each other during the action.
- As the wrists are rotated causing the hands to alternately rise and fall, only the tips of the three medial fingers strike the client lightly and in quick succession.
- The fingers remain relaxed at all times so that the movement is light (i.e. the client should not be struck hard by "solid" objects in fast succession - but lightly so that the stimulation is provided by the speed not the impact).
- The rate of a hacking movement may be typically 4-6 strikes per second.

Pounding

- Pounding movement the researcher's hands are loosely clenched into fists with the thumbs lying upper-most and flat against the clenched index fingers.
- The movement itself is similar to the hacking movement except that in the case of pounding it is the lightly clenched little finger of each hand that makes contact with the client (as compared with the ends of the three medial fingers in the case of hacking).
- Also, the movement is actioned from the wrists and not from the elbows, and both hands are used to strike the client's body alternately.
- They are positioned just a short distance apart so that both hands work on approximately the same area of the client.

Picking Up.

- Picking up is a single-handed action in which the thumb is one component and the medial two or three fingers.

- The cleft between the thumb and index finger of the researcher's hand remains in contact with the client's skin to maintain the depth of the effect and to prevent pinching.

Hot fomentation

- After the castor oil massage the hot fomentation 125°F (51.7°C) was kept ready
- Fold the towel
- Soak the towel in the fomentation and squeeze out
- Wrap the towel in to the knee joint
- Check the skin every 1 minute
- Continue the hot fomentation for five minutes

APPENDIX-D

LETTER SEEKING PERMISSION TO CONDUCT RESEARCH STUDY

From

Mrs. C.Cassia Jemi
M.Sc(N) II year,
KarpagaVinayaga College of Nursing,
Pudukkottai.

To

The Principal,
KarpagaVinayaga College Of Nursing,
Pudukkottai.

Respected madam,

SUB: Requesting permission to conduct the research study, regarding...

I am Mrs.C.Cassia Jemi, II year M.Sc(N) student of KarpagaVinayaga College Of Nursing, Pudukkottai, to conduct a research project which is to be submitted to the TamilNadu Dr. M.G.R. Medical University, Chennai as partial fulfillment of University requirement for award of M.Sc(N) Degree.

TOPIC: A quasi experimental study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected community areas, in Pudukkottai

I humbly request you to grant permission to conduct research study. I will be highly grateful to you for your favour.

Thanking you

Place:

Yours Sincerely,

Date:

(C.Cassia Jemi)

From

Mrs. C.Cassia Jemi
M.Sc(N) II year,
KarpagaVinayaga College of Nursing,
Pudukkottai.

To

The Principal,
KarpagaVinayaga College Of Nursing,
Pudukkottai.

Respected madam,

SUB: Requesting permission to conduct the research study, regarding...

I am Mrs.C.Cassia Jemi, II year M.Sc(N) student of KarpagaVinayaga College Of Nursing, Pudukkottai, to conduct a research project which is to be submitted to the TamilNadu Dr. M.G.R. Medical University, Chennai as partial fulfillment of University requirement for award of M.Sc(N) Degree.

TOPIC: A quasi experimental study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected community areas, in Pudukkottai

I humbly request you to grant permission to conduct research study. I will be highly grateful to you for your favour.

Thanking you

Place:

Yours Sincerely,

Date:

(C.Cassia Jemi)

LETTER REQUISITION FOR VALIDATION OF THE TOOL

From,

Mrs. Cassia Jemi
M.Sc.Nursing II year
Karpaga Vinayaga College of Nursing ,
Pudukkottai

To,

Through,

The Principal
Karpaga Vinayaga College of Nursing,
Pudukkottai

Respected Sir / Madam

Sub: Requisition for content validity of the tool

I am C.CASSIA JEMI, doing M.Sc.Nursing II year in Karpaga Vinayaga College of Nursing, Pudukkottai , under The Tamil Nadu , Dr. M.G.R Medical University , Chennai . As a partial fulfillment of my M.Sc.Nursing Degree programme, I am planning to do a research on “ **A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELETED COMMUNITY AREAS IN PUDUKOTTAI** ”. Structured interview schedule, oxford knee score are the tools that have been developed for the research study. I humbly request you to do the content validity of described tools and give your expert and valuable opinion.

I will be very thankful for your kind consideration. Kindly return it to the undersigned.

Thanking you,

Yours sincerely,

(C. Cassia Jemi)

Encl:

1. Certificate of content validity
2. Chapter I, III & tool for data collection
3. 3 Point Scale for evaluating the chapters and tool
4. Self-addressed envelope

LIST OF EXPERTS FOR CONTENT VALIDITY

1. Dr. T.Rajendran, MBBS, DNB (Ortho)

Fellow in Arthroplasty,
Orthopedic Surgeon,
Apollo Reach Hospital,
Karaikudi.

2. Prof. S.SUMITHRA, M.Sc.(N), M.Sc.(Y), Ph.D.,

Principal
Karpaga Vinayaga College of Nursing
Pudukkottai

3. Prof. Mrs.Poonguzhali, M.Sc.(N), MA., MBA., [PhD].,

Principal,
College of Nursing,
Madurai Medical college, Madurai-20.

4. Prof. Sara, M.Sc.(N), [PhD].,

HOD, Dept of Medical Surgical Nursing.
Rani Meyyammai College of Nursing,
Annamalai University, Chidambaram.

5. Prof. Dr. G. Jayathangaselvi, M.Sc.(N), [PhD].,

HOD, Dept of Medical Surgical Nursing.
C.S.I JeyarajAnnapackiam College of Nursing,
Madurai

6. Prof.Dr. Devaikirubai, M.Sc.(N), P.hD

HOD, Dept of Medical Surgical Nursing
Sacred Heart College of Nursing, Ultra Trust, Madurai

7. Prof. Reena , M.Sc.(N),

Principal
Tagore College of Nursing, Chennai

CERTIFICATE FOR VALIDITY

This is to certify that the Structured interview schedule of oxford knee score on “A study to evaluate the effectiveness of castor oil massage on knee joint pain among post menopausal women at selected area in Pudukottai ”, has been validated and found appropriate with mentioned suggestion .

Signature :

Name :

Designation :

Name of the college:

PERMISSION LETTER

FROM

Ms.C.CASSIA JEMI,
M.Sc. (N) II year,
Karpaga Vinayaga College of Nursing,
Pudukkottai.

TO

Dr. RAJENDRAN THIAGARAJAN., DNB ORTHO;
Apollo Reach Hospital,
Karikudi.

Through Principal

Respected Sir,

Sub: **Requesting permission for the guidance to conduct study regarding,**

This is for your kind information that, I am C.Cassia Jemi, II year M.Sc Nursing student of Karpaga Vinayaga College of Nursing, Pudukkottai have to plan to conduct a research project which is to be submitted to Dr. M. G.R Medical University in partial fulfillment of university requirement for the award of Masters of Nursing Degree.

TOPIC:"A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED COMMUNITY AREAS, IN PUDUKKOTTAI".

I humbly request you to give me guidance and suggestions for conducting for study.

Thanking you,

Yours Faithfully,

C.CASSIA JEMI

*Study is accepted.
Permission may be
granted.*

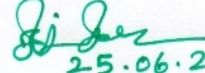

Dr.T.RAJENDRAN, MBBS, DNB(Ortho)
Fellow in Arthroplasty
Consultant Orthopedic Surgeon
Reg. No: 74281

F.CERTIFICATE FOR EDITING

Certified that the dissertation paper titled “A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED AREA IN PUDUKKOTTAI” by Mrs. C.CASSIA JEMI.

It has been checked for accuracy and correctness of Tamil language using in presenting the paper is lucid, unambiguous free of grammatical and spelling errors and is apt for the purpose.

சீ.பாக்கியலெட்சுமி. M.A.,B.Ed.,


25.06.2018

தலைமையாசிரியர்
உராட்சி ஒன்றிய நடுநிலைப்பள்ளி
கைடுறவுபட்டி
இடையமேலூர் (அஞ்சல்)
சிவகங்கை மாவட்டம்

Certificate of Training

This is to certify that **Mrs.C.Cassia Jemi., MSc., (Nursing)** has successfully massge therapy in our department at Apollo Hospitals, Karaikudi 1.11.2017 to 30.11.2017.

During the training period, her performance was good

Regards,



V.Rajkumar. BPT.,MPT.,(Neuro)
Reg.number :74046817
Head of the Department
Physiotherapy

CERTIFICATE FOR VALIDITY


This is to certify that the candidate **Mrs. C.CASSIA JEMI' M.Sc Nursing** second year and can very well apply the Deep Tissue Massage such as stroking, skin rolling, hacking, pounding, picking up in the case of reliving the knee joint pain among post menopausal women. It is valid to apply these massage for the research work titled “ **A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED AREA IN PUDUKKOTTAI**”. As every massage rendered in different forms, has its own effect in massage in general, the deep tissue massage are very effective in reliving knee joint pain in particular.



**V.Rajkumar. MPT Neuro –Physiotherapist,
Reg. No – 74046817.**

CERTIFICATE FOR VALIDITY

This is to certify that the structured interview schedule and Oxford Knee Score on "A study to evaluate the effectiveness of Castor oil massage with hot fomentation on knee joint pain among post-menopausal women at selected community areas, Pudukottai", has been validated and found appropriate with mentioned suggestion.

Signature : 

Name : G. SANTHOSHKUMAR.

Designation : ASSISTANT PROFESSOR

Name of the college :

G. SANTHOSHKUMAR, M. STAT. M. PHIL., DOM.,
ASSISTANT PROFESSOR,
S.J. COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS),
SIVAPURAM, PUDUKKOTTAI 622 422.

CERTIFICATE FOR VALIDITY

This is to certify that the Structured interview schedule on "a study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected area in pudukkottai," , has been validated and found appropriate with mentioned suggestion .

Signature : S.P. 6/2/18

Name : Prof. S. POONGUZHALI MSc(N)

Designation : PRINCIPAL

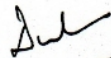
Name of the college : PROF. S. POONGUZHALI M.Sc(N), M.A., MBA., Ph.D.,
PRINCIPAL
COLLEGE OF NURSING,
MADURAI MEDICAL COLLEGE, MADURAI-20

CERTIFICATE FOR VALIDITY

This is to certify that the Structured interview schedule on “a study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected area in pudukkottai,” , has been validated and found appropriate with mentioned suggestion .

Signature

:



Name

:

Dr. F. DEVANADASAN

Designation

:

PROFESSOR

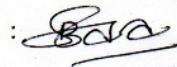
Name of the college :

SACRED HEART N.Y. COLLEGE
MADURAI

CERTIFICATE FOR VALIDITY

This is to certify that the Structured interview schedule on "a study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected area in pudukkottai," has been validated and found appropriate with mentioned suggestion .

Signature

: 

Name

: Dr. B. SARA

Designation

: READER IN NURSING


Name of the college :

Arani Meyyammai College of Nursing, Annamalai University



CERTIFICATE FOR VALIDITY

This is to certify that the Structured interview schedule on "a study to evaluate the effectiveness of castor oil massage with hot fomentation on knee joint pain among post menopausal women at selected area in pudukkottai," , has been validated and found appropriate with mentioned suggestion .

Signature : 

Name : Prof. Dr. G. Jaya Thangar Selvi

Designation : HOD Cum Prof- Med - Surg

Name of the college : CSI J



TAGORE COLLEGE OF NURSING
TAGORE MEDICAL COLLEGE & HOSPITAL (CAMPUS)

Rathinamangalam, Melakkottaiyur Post, Chennai - 600 127. Ph : 30102222

Email : tagorenursing2017@gmail.com Phone : 044 30102277

(Recognized by Indian Nursing Council, New Delhi. Tamilnadu Nurses and Midwives Council, Chennai and Affiliated to the Tamilnadu Dr. M.G.R. Medical University, Guindy, Chennai).

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by **Mrs.Cassia Jemi. C, M.Sc.,** Nursing student of Karpaga Vinayaga College of Nursing, for the study "**A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED AREA IN PUDUKKOTTAI.**" is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE: 09/02/2018

SIGNATURE

Tagore Educational Trust

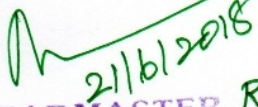
Regd. Office : No.25. Mahalingam Street, Mahalingapuram, Nungambakkam, Chennai - 600 034. Ph : 044-28173772

F.CERTIFICATE FOR EDITING

Certified that the dissertation paper titled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF CASTOR OIL MASSAGE WITH HOT FOMENTATION ON KNEE JOINT PAIN AMONG POST MENOPAUSAL WOMEN AT SELECTED AREA IN PUDUKKOTTAI"** by Mrs. C.CASSIA JEMI.

It has been checked for accuracy and correctness of English language using in presenting the paper is lucid, unambiguous free of grammatical and spelling errors and is apt for the purpose.




21/6/2018
HEADMASTER, R. POKKISHAM
K. R. Hr. Sec. School,
SIVAGANGAI.
M.A., B.Ed.,